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FILE COVERS 1907 - 1 May 2007  VOL 146 ISS 19
FILE LAST UPDATED: 30 Apr 2007  (20070430/ED)

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 This file contains CAS Registry Numbers for easy and accurate
 substance identification.

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L80  ANSWER 1 OF 10  HCAPLUS  COPYRIGHT 2007 ACS on STN
AN   2004:625897  HCAPLUS  Full-text
DN   141:126401
TI   Method of preparation of solid electrolyte with high ionic
     conductivity for battery use
IN   Park, Young-Sin; Jin, Young-Gu; Lee, Jong-Heun
     ; Lee, Seok-Soo
PA   Samsung Electronics Co., Ltd., S. Korea
SO   Eur. Pat. Appl., 15 pp.
     CODEN: EPXXDW
DT   Patent
LA   English
FAN.CNT 1
     PATENT NO.          KIND   DATE       APPLICATION NO.        DATE
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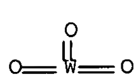
PI   EP 1443582          A1     20040804   EP 2004-250404         20040126 <--
         R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
             IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK
     KR 2004069752       A      20040806   KR 2003-6288           20030130 <--
     US 2004151986       A1     20040805   US 2004-757500         20040115 <--
     JP 2004235155       A      20040819   JP 2004-24681          20040130 <--
PRAI KR 2003-6288        A      20030130  <--
AB    A solid electrolyte is disclosed including a composition represented by
      formula: aLi2O-bB2O3-cM-dX, wherein M is at least one selected from the group
      consisting of TiO2, V2O5, WO3, and Ta2O5; X is at least one selected from LiCl
      and Li2SO4; 0.4<a<0.55; 0.4<b<0.55; 0.02<c<0.05; a+b+c = 1, and 0≤d<0.2.  A
      method for preparing the solid electrolyte and a battery using the solid
      electrolyte are also provided. The solid electrolyte exhibits high ionic
      conductivity  Lithium and thin film batteries using the solid electrolyte are
      improved in charge/discharge rate, power output, and cycle life.
IC   ICM  H01M0008-10
     ICS  H01M0006-18
```

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 57
ST **battery electrolyte** high ionic cond prepn method
IT **Secondary batteries**
(lithium; method of preparation of solid **electrolyte** with high
ionic conductivity for **battery** use)
IT **Battery electrolytes**
Ionic conductivity
(method of preparation of solid **electrolyte** with high ionic conductivity
for **battery** use)
IT Glass, uses
RL: DEV (Device component use); SPN (Synthetic preparation); PREP
(Preparation); USES (Uses)
(method of preparation of solid **electrolyte** with high ionic conductivity
for **battery** use)
IT **1303-86-2P, Boron oxide** (**B2O3**), uses
1314-35-8P, Tungsten oxide (**WO3**),
uses **1314-61-0P, Tantalum oxide** (
Ta2O5) **1314-62-1P, Vanadium oxide** (
V2O5), uses **7447-41-8P, Lithium
chloride** (**LiCl**), uses **10377-48-7P,
Lithium sulfate 12057-24-8P, Lithium
oxide** (**Li2O**), uses **13463-67-7P,
Titania**, uses
RL: DEV (Device component use); SPN (Synthetic preparation); PREP
(Preparation); USES (Uses)
(glass; method of preparation of solid **electrolyte** with high ionic
conductivity for **battery** use)
IT 554-13-2, Lithium carbonate
RL: CPS (Chemical process); PEP (Physical, engineering or chemical
process); PROC (Process)
(precursor; method of preparation of solid **electrolyte** with high
ionic conductivity for **battery** use)
IT **1303-86-2P, Boron oxide** (**B2O3**), uses
1314-35-8P, Tungsten oxide (**WO3**),
uses **1314-61-0P, Tantalum oxide** (
Ta2O5) **1314-62-1P, Vanadium oxide** (
V2O5), uses **7447-41-8P, Lithium
chloride** (**LiCl**), uses **10377-48-7P,
Lithium sulfate 12057-24-8P, Lithium
oxide** (**Li2O**), uses **13463-67-7P,
Titania**, uses
RL: DEV (Device component use); SPN (Synthetic preparation); PREP
(Preparation); USES (Uses)
(glass; method of preparation of solid **electrolyte** with high ionic
conductivity for **battery** use)
RN 1303-86-2 HCAPLUS
CN Boron oxide (B2O3) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 1314-35-8 HCAPLUS
CN Tungsten oxide (WO3) (CA INDEX NAME)



RN 1314-61-0 HCAPLUS

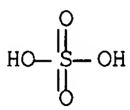
CN Tantalum oxide (Ta2O5) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 1314-62-1 HCAPLUS
CN Vanadium oxide (V2O5) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 7447-41-8 HCAPLUS
CN Lithium chloride (LiCl) (CA INDEX NAME)

Cl— Li

RN 10377-48-7 HCAPLUS
CN Sulfuric acid, lithium salt (1:2) (CA INDEX NAME)



●2 Li

RN 12057-24-8 HCAPLUS
CN Lithium oxide (Li2O) (CA INDEX NAME)

Li— O— Li

RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO2) (CA INDEX NAME)

O══ Ti══ O

L80 ANSWER 2 OF 10 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2004:100613 HCAPLUS Full-text
DN 140:131168
TI Apparatus and method for fracture absorption layer for use in fabrication of thin-film electrochemical devices
IN Benson, Martin H.; Neudecker, Bernd J.
PA ITN Energym Systems, Inc., USA
SO U.S. Pat. Appl. Publ., 25 pp.
CODEN: USXXCO
DT **Patent**
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

PI US 2004023106 A1 20040205 US 2002-210180 20020802 <--
US 6770176 B2 20040803
US 2004219434 A1 20041104 US 2004-840497 20040506 <--
PRAI US 2002-210180 A3 20020802 <--

AB An apparatus for use as a fracture absorption layer, an apparatus for use as an electrochem. device, and methods of manufacturing the same are disclosed. The apparatus and methods of the present invention may be of particular use in the manufacture of thin-film, lightwt., flexible or conformable, electrochem. devices such as **batteries**, and arrays of such devices. The present invention may provide many advantages including stunting fractures in a first electrochem. layer from propagating in a second electrochem. layer.

IC ICM **H01M0006-00**

INCL 429122000; 429126000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72

ST **battery** fabrication fracture absorption layer app; electrochem device fabrication fracture absorption layer app

IT **Electrolytes**
Primary batteries
(thin-film; apparatus and method for fracture absorption layer for use in fabrication of thin-film electrochem. devices)

IT 554-13-2, Lithium carbonate 1303-28-2, Arsenic oxide (As2O5)
1303-86-2, Boron oxide (B2O3), uses
1304-56-9, Beryllium oxide beo, uses 1306-38-3, Ceria, uses 1310-53-8, Germanium oxide (GeO2), uses 1314-23-4, Zirconia, uses 1314-36-9, Yttria, uses 1314-56-3, Phosphorus pentoxide, uses 1327-53-3, Arsenic oxide (As2O3) 1344-28-1, Alumina, uses 7429-90-5, Aluminum, uses 7439-93-2, Lithium, uses 7440-20-2, Scandium, uses 7440-21-3, Silicon, uses 7440-31-5, Tin, uses 7440-38-2, Arsenic, uses 7440-41-7, Beryllium, uses 7440-42-8, Boron, uses 7440-45-1, Cerium, uses 7440-56-4, Germanium, uses 7440-65-5, Yttrium, uses 7440-67-7, Zirconium, uses **7447-41-8, Lithium chloride**, uses 7550-35-8, Lithium bromide 7631-86-9, Silica, uses 7704-34-9, Sulfur, uses 7723-14-0, Phosphorus, uses 7723-14-0D, Phosphorus, compound 7789-24-4, Lithium fluoride, uses 7791-03-9, Lithium perchlorate 9002-84-0, Ptfe 9003-39-8, Polyvinylpyrrolidone 10043-11-5, Boron nitride (BN), uses **10377-48-7, LIthium sulfate** 10377-51-2, Lithium iodide 10377-52-3, LIthium phosphate 11118-04-0, Lithium phosphorus nitride Li7PN4 11126-15-1, Lithium vanadium oxide 12003-67-7, Aluminum lithium oxide allio2 12005-14-0, Aluminum lithium oxide al5lio8 12025-11-5, Germanium lithium oxide geli4o4 12033-89-5, Silicon nitride, uses **12057-24-8**, Lithia, uses 12060-08-1, Scandium oxide (Sc2O3) 12065-36-0, Germanium nitride ge3n4 12136-91-3, Phosphorus nitride p3n5 12169-03-8, Lithium yttrium oxide liyo2 12209-15-3, Lithium scandium oxide lisco2 12232-41-6, Beryllium lithium oxide Be2Li2O3 12355-58-7, Aluminum lithium oxide alli5o4 12384-10-0, Lithium zirconium oxide li8zro6 12408-97-8, Boron lithium nitride BLi3N2 12521-45-8, Lithium silicon nitride LiSi2N3 12521-55-0, Lithium silicon nitride Li2SiN2 12521-66-3, Lithium silicon nitride Li8SiN4 13453-69-5, Lithium borate libo2 13453-84-4, Lithium silicon oxide li4sio4 13478-14-3, Lithium arsenate 14024-11-4, Aluminum lithium chloride AlLiCl4 14283-07-9, Lithium tetrafluoroborate 15138-76-8, Lithium tetrafluoroaluminate 17739-47-8, Phosphorus nitride pn 19497-94-0, Aluminum lithium silicate allisio4 21324-40-3, Lithium hexafluorophosphate 24304-00-5, Aluminum nitride Aln 25322-68-3, Polyethylene oxide 25658-42-8, Zirconium nitride (ZrN) 25764-13-0, Yttrium nitride (YN) 26134-62-3, Lithium nitride li3n 30622-39-0,

LIthium titanium phosphate LiTi2(PO4)3   39300-70-4, Lithium nickel oxide
39449-52-0, Lithium oxide silicate (Li8O2(SiO4))
39457-42-6, Lithium manganese oxide   56320-64-0   57349-02-7, Cerium
lithium oxide celio2   60883-88-7, Lithium phosphorus
nitride LiPN2   61027-73-4, Aluminum lithium nitride AlLi3N2   62795-18-0
66581-07-5   66581-08-6   67181-65-1, Lithium silicon nitride Li5SiN3
76068-31-0   87796-15-4, Lithium scandium phosphate Li3Sc2(PO4)3
101993-97-9, Lithium phosphate silicate Li3.6(PO4)0.4(SiO4)0.6
111706-40-2, Cobalt lithium oxide CoLi0-1O2
113957-82-7, Lithium silicon nitride Li21Si3N11   113957-83-8, Lithium
silicon nitride Li18Si3N10   143080-25-5, Phosphorus nitride oxide p4n6o
170171-06-9, Aluminum lithium fluoride AlLiF4   184905-46-2, Lithium
nitrogen phosphorus oxide   651045-58-8, Lithium nitrogen phosphorus tin
oxide
RL: DEV (Device component use); USES (Uses)
(apparatus and method for fracture absorption layer for use in fabrication
of thin-film electrochem. devices)

IT 7446-07-3, Tellurium oxide   7446-08-4, Selenium oxide seo2   7782-49-2,
Selenium, processes   12031-80-0, **Lithium oxide** li2o2
12142-83-5, Tin nitride Sn3N4   12188-25-9, Lithium tin oxide li2sno3
12286-33-8, Tin phosphide Sn4P3   12344-15-9, Lithium tin oxide li8sno6
12372-55-3   12640-89-0, Selenium oxide   13451-18-8, Tellurium oxide teo3
13494-80-9, Tellurium, processes   13762-75-9, Lithium metaphosphate
13843-41-9, Lithium pyrophosphate   15578-26-4, Tin phosphate Sn2P2O7
15578-32-2, Tin phosphate Sn3(PO4)2   18282-10-5, Tin dioxide
23369-45-1, Phosphorus nitride oxide pno   25324-56-5, Tin phosphide SnP
37221-29-7, Sulfur nitride   37367-13-8, Tin phosphide SnP3   50645-72-2,
Lithium tin phosphide Li5SnP3   50645-73-3, Lithium tin phosphide Li8SnP4
53680-59-4   102055-50-5, Lithium silicon nitride   116301-91-8,
Phosphorous acid, trilithium salt   161286-52-8, Lithium sulfide
thiosilicate (Li1.2S0.2(SiS3)0.4)   651045-60-2, Lithium phosphide
(Li0-3P)   651045-62-4, Lithium nitride phosphide (Li10N10P)
651045-64-6, Lithium metaphosphate nitrate oxide
(Li2.88(PO3)(NO3)0.14O0.31)
RL: CPS (Chemical process); PEP (Physical, engineering or chemical
process); PROC (Process)
(sputter target; apparatus and method for fracture absorption layer for use
in fabrication of thin-film electrochem. devices)

IT **1303-86-2, Boron oxide (B2O3)**, uses
7429-90-5, Aluminum, uses **7447-41-8, Lithium
chloride**, uses **10377-48-7, LIthium
sulfate 12057-24-8**, Lithia, uses
RL: DEV (Device component use); USES (Uses)
(apparatus and method for fracture absorption layer for use in fabrication
of thin-film electrochem. devices)

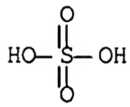
RN 1303-86-2 HCAPLUS
CN Boron oxide (B2O3) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7447-41-8 HCAPLUS
CN Lithium chloride (LiCl) (CA INDEX NAME)

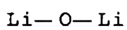
Cl—Li

RN 10377-48-7 HCAPLUS
CN Sulfuric acid, lithium salt (1:2) (CA INDEX NAME)



●2 Li

RN 12057-24-8 HCAPLUS
CN Lithium oxide (Li2O) (CA INDEX NAME)



RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon	1991			GB 2236540 A	HCAPLUS
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Anon	1997			WO 9721538	HCAPLUS
Anon	1998			WO 9847196	HCAPLUS
Anon	1999			WO 9943034	HCAPLUS
Anon	2000			WO 0008234	HCAPLUS
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Bates	2001			US 6218049 B1	HCAPLUS
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Hobson	1995			US 5445906 A	HCAPLUS
Huang	1999			US 5948196 A	HCAPLUS
Keem	1993			US 5268216 A	
Kennedy	1997			US 5682594 A	HCAPLUS
Narasimhan	2001			US 20010016273 A1	
Neudecker	2001			US 6168884 B1	HCAPLUS
Steffier	1995			US 5455106 A	HCAPLUS
Steffier	1996			US 5480707 A	HCAPLUS
Steffier	1996			US 5545435 A	HCAPLUS
Steffier	1996			US 5558907 A	HCAPLUS
Van Den Berg	2001			US 6224968 B1	HCAPLUS

L80 ANSWER 3 OF 10 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2004:78581 HCAPLUS Full-text
DN 140:131130
TI Composite electrodes and encapsulated electrode particles for use in solid electrochemical devices
IN Holman, Richard K.; Chiang, Yet-ming; Gozdz, Antoni S.; Loxley, Andrew; Nunes, Benjamin; Ostraat, Michele; Riley, Gilbert N.; Viola, Michael S.
PA A123 Systems, Inc., USA
SO U.S. Pat. Appl. Publ., 28 pp.

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     CODEN: USXXCO
DT   Patent
LA   English
FAN.CNT 1
     PATENT NO.          KIND   DATE       APPLICATION NO.       DATE
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PI   US 2004018430        A1    20040129   US 2003-354405        20030130 <--
     US 7087348           B2    20060808
     WO 2004011901        A2    20040205   WO 2003-US22954       20030722 <--
     WO 2004011901        A3    20040624
         W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
             CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
             GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
             LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH,
             PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ,
             UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW
         RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,
             KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES,
             FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR,
             BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
     AU 2003281736        A1    20040216   AU 2003-281736        20030722 <--
PRAI US 2002-398697P      P     20020726  <--
     US 2003-354405       A     20030130  <--
     WO 2003-US22954      W     20030722
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AB The present invention relates generally to electrodes for use in electrochem. devices, and more particularly, to coated electrode particles for use in solid **electrochem. cells**, and to materials and systems for improving electronic conductivity and repulsive force characteristics of an electrode network. The present invention also relates to an article comprising a plurality of electroactive particles that form an electrode network wherein the electroactive particles are coated with a system of elec. conductive and low refractive index materials.

IC ICM **H01M0004-64**
ICS **H01M0004-62**

INCL 429233000; 429217000; 429232000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 56, 72

ST electrochem device composite electrode; encapsulated electrode particle electrochem device; **battery** encapsulated electrode particle

IT **Battery** electrodes
Conducting polymers
Electric conductivity
Electrodes
Ionic conductivity
Polymer electrolytes
Sol-gel processing
(composite electrodes and encapsulated electrode particles for use in solid electrochem. devices)

IT **Secondary batteries**
(lithium; composite electrodes and encapsulated electrode particles for use in solid electrochem. devices)

IT 7429-90-5, Aluminum, uses
RL: MOA (Modifier or additive use); USES (Uses)
(LiMnO2 doped with; composite electrodes and encapsulated electrode particles for use in solid electrochem. devices)

IT 79-10-7D, Acrylic acid, fluorinated ester 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 1307-96-6, Cobalt oxide coo, uses 1313-13-9, Manganese oxide mno2, uses 1313-99-1, Nickel oxide nio, uses **1314-62-1, Vanadium oxide**, uses 1317-34-6,

Manganese oxide mn2o3 1317-35-7, Manganese oxide mn3o4 1344-43-0,
Manganese oxide mno, uses 1345-25-1, Iron oxide feo, uses 7439-93-2,
Lithium, uses 7439-93-2D, Lithium, intercalation compound 7440-21-3,
Silicon, uses 7440-22-4, Silver, uses 7440-31-5, Tin, uses
7440-36-0, Antimony, uses 7440-42-8, Boron, uses 7440-56-4, Germanium,
uses 7440-66-6, Zinc, uses 7440-69-9, Bismuth, uses 7782-42-5,
Graphite, uses 9002-84-0, Ptfe 9003-07-0, Polypropylene 9003-53-6,
Polystyrene 11099-11-9, **Vanadium oxide** 11126-15-1,
Lithium vanadium oxide 12002-78-7 12031-65-1,
Lithium nickel oxide linio2 12037-30-8, **Vanadium oxide**
v6o11 12037-42-2D, **Vanadium oxide** V6O13,
lithium-intercalated 12048-27-0, Bili 12057-17-9, Lithium manganese
oxide limn2o4 12057-22-6, Lizn 12057-30-6, Antimony, compound with
lithium (1:3) 12057-33-9 12063-07-9, Iron lithium
oxide fe2lio4 12162-79-7, Lithium manganese oxide limno2
12190-79-3, Cobalt lithium oxide colio2 12253-44-0
12338-02-2 **13463-67-7, Titanium oxide**, uses
13826-59-0, Lithium manganese phosphate limnpo4 15365-14-7, Iron lithium
phosphate felipo4 18282-10-5, Tin dioxide 18358-13-9D, Methacrylate,
fluorinated ester 21651-19-4, Tin monoxide 24937-79-9, Pvdf
25014-41-9, Polyacrylonitrile 25322-68-3, Peo 37217-08-6, Lithium
titanium oxide liti2o4 49717-87-5D, 2-Propenoic acid,
ion(1-) homopolymer, fluoroalkyl derivative 49717-97-7D, 2-Propenoic acid,
2-methyl-, ion(1-), homopolymer, fluoroalkyl derivative 50926-11-9, Ito
52627-24-4, Cobalt lithium oxide 53262-48-9
55608-41-8 56627-44-2 61812-08-6, Lithium silicide Li21Si8
66403-10-9, Lithium boride (Li5B4) 67070-82-0 71012-86-7, Lithium
boride (Li7B6) 74083-26-4 76036-33-4, Lithium silicide Li12Si7
114778-10-8, Iron lithium sulfate fe2li2(so4)3
496816-56-9, Lithium, compound with silver (10:3)
RL: DEV (Device component use); USES (Uses)
(composite electrodes and encapsulated electrode particles for use in
solid electrochem. devices)

IT **1303-86-2, Boron oxide (B2O3)**, uses
1304-76-3, Bismuth oxide, uses 1314-23-4, Zirconium oxide, uses
1314-56-3, Phosphorus oxide (P2O5), uses 1317-36-8, Lead oxide (PbO),
uses 1335-25-7, Lead oxide 1343-98-2, Silicon hydroxide 1344-28-1,
Aluminum oxide, uses **7447-41-8, Lithium
chloride**, uses 7631-86-9, Silicon oxide, uses 7789-24-4,
Lithium fluoride, uses 10043-35-3, Boric acid (H3BO3), uses
10361-43-0, Bismuth hydroxide 10377-51-2, Lithium iodide 11098-99-0,
Molybdenum oxide **12057-24-8**, Lithia, uses 12651-23-9, Titanium
hydroxide 14475-63-9, Zirconium hydroxide 21645-51-2, Aluminum
hydroxide, uses 39345-91-0, Lead hydroxide 126853-99-4, Molybdenum
hydroxide 157858-56-5, Germanium oxide 350010-45-6, Germanium
hydroxide
RL: DEV (Device component use); USES (Uses)
(glass; composite electrodes and encapsulated electrode particles for
use in solid electrochem. devices)

IT 7429-90-5, Aluminum, uses
RL: MOA (Modifier or additive use); USES (Uses)
(LiMnO2 doped with; composite electrodes and encapsulated electrode
particles for use in solid electrochem. devices)

IT **1314-62-1, Vanadium oxide**, uses
13463-67-7, Titanium oxide, uses
RL: DEV (Device component use); USES (Uses)
(composite electrodes and encapsulated electrode particles for use in
solid electrochem. devices)

RN 1314-62-1 HCAPLUS
CN Vanadium oxide (V2O5) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO_2) (CA INDEX NAME)

O=Ti=O

IT **1303-86-2, Boron oxide** (B_2O_3), uses
7447-41-8, Lithium chloride, uses
12057-24-8, Lithia, uses
RL: DEV (Device component use); USES (Uses)
(glass; composite electrodes and encapsulated electrode particles for use in solid electrochem. devices)
RN 1303-86-2 HCAPLUS
CN Boron oxide (B_2O_3) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 7447-41-8 HCAPLUS
CN Lithium chloride (LiCl) (CA INDEX NAME)

Cl—Li

RN 12057-24-8 HCAPLUS
CN Lithium oxide (Li_2O) (CA INDEX NAME)

Li—O—Li

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
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Anon	1992			JP 04-58455	HCAPLUS
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Armand	1988			US 4758483 A	HCAPLUS
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Atkinson	1986			US 4599114 A	HCAPLUS
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Biagetti	1973			US 3765943 A	HCAPLUS
Bouridah	1985	15	233	Solid State Ionics	HCAPLUS
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Et Al Van Oss	1977	6	341	Imunnunol. Com	
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Fauteux	1996			US 5578396 A	
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French	1995	75	13	Solid State Ionics	HCAPLUS
Fukuyama	2002			US 20020015278 A1	
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Gozdz	1996			US 5554459 A	HCAPLUS
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Gray, F	1991			Solid Polymer Electr	
Grunwald	2000			US 6096453 A	HCAPLUS
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Hasebe	1997			US 5654115 A	HCAPLUS
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Hirai	1993			US 5187209 A	HCAPLUS
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Holman	2004			US 20040018430 A1	HCAPLUS
Howard	1998			US 5714053 A	HCAPLUS
Huang	1995			US 5436093 A	HCAPLUS
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Jan	2001			US 6300016 B1	HCAPLUS
Kang	2002			US 6395429 B1	HCAPLUS
Klein	1997			US 5698342 A	HCAPLUS
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Kwak	2001			US 6280875 B1	HCAPLUS
Kweon	2002			US 20020071990 A1	
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Lecras	1996	89	203	Solid State Ionics	HCAPLUS
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Narang	2002			US 20020074972 A1	
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Yoshioka             |2001 |      |     |US 20010007726 A1   |
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L80 ANSWER 4 OF 10 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2003:413937 HCAPLUS Full-text
DN 138:404345
TI **Battery** structures, self-organizing structures and related methods
IN Chiang, Yet Ming; Moorehead, William Douglas; Gozdz, Antoni S.; Holman, Richard K.; Loxley, Andrew; Riley, Gilbert N.; Viola, Michael S.
PA A123systems, Inc., USA
SO U.S. Pat. Appl. Publ., 70 pp., Cont.-in-part of U.S. Ser. No. 21,740. CODEN: USXXCO
DT **Patent**
LA English
FAN.CNT 5

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2003099884	A1	20030529	US 2002-206662	20020726 <--
	US 2003082446	A1	20030501	US 2001-21740	20011022 <--
	US 2004018431	A1	20040129	US 2003-354673	20030130 <--
	US 2005272214	A1	20051208	US 2005-108602	20050418 <--
PRAI	US 2001-308360P	P	20010727 <--		
	US 2001-21740	A2	20011022 <--		
	US 2000-242124P	P	20001020 <--		
	US 2002-206662	A2	20020726 <--		
	US 2004-563026P	P	20040416		
	US 2004-583850P	P	20040629		

AB An energy storage device includes a first electrode comprising a first material and a second electrode comprising a second material, at least a portion of the first and second materials forming an interpenetrating network when dispersed in an **electrolyte**, the **electrolyte**, the first material and the second material are selected so that the first and second materials exert a repelling force on each other when combined. An electrochem. device, includes a first electrode in elec. communication with a first current collector; a second electrode in elec. communication with a second current collector; and an ionically conductive medium in ionic contact with the first and second electrodes, wherein at least a portion of the first and second electrodes form an interpenetrating network and wherein at least one of the first and second electrodes comprises an electrode structure providing two or more pathways to its current collector.
IC ICM **H01M0004-64**
ICS **H01M0004-80; H01M0004-58**
INCL 429233000; 429235000; 429231950; 429212000; 429231400; 429210000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **battery** self organizing structure
IT **Battery** anodes
Battery cathodes
Coating process
Embossing
(**battery** structures, self-organizing structures and related methods)
IT Fluoropolymers, uses
Glass, uses
Polyamines
Polyimides, uses

Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(**battery** structures, self-organizing structures and related methods)

IT Polymers, uses
RL: DEV (Device component use); USES (Uses)
(block, Li salt-doped; **battery** structures, self-organizing structures and related methods)

IT **Primary batteries**
(lithium; **battery** structures, self-organizing structures and related methods)

IT Intercalation compounds
RL: DEV (Device component use); USES (Uses)
(lithium; **battery** structures, self-organizing structures and related methods)

IT Azines
Group VA element compounds
RL: DEV (Device component use); USES (Uses)
(phosphazines; **battery** structures, self-organizing structures and related methods)

IT 7439-95-4, Magnesium, uses
RL: MOA (Modifier or additive use); USES (Uses)
(CoLiO2 doped with; **battery** structures, self-organizing structures and related methods)

IT 7440-03-1, Niobium, uses 7440-25-7, Tantalum, uses 7440-32-6, Titanium, uses 7440-33-7, Tungsten, uses 12042-37-4, AlLi
RL: MOA (Modifier or additive use); USES (Uses)
(LiFePO4 doped with; **battery** structures, self-organizing structures and related methods)

IT 7429-90-5, Aluminum, uses
RL: MOA (Modifier or additive use); USES (Uses)
(LiMnO2 doped with; **battery** structures, self-organizing structures and related methods)

IT 68-12-2, Dmf, uses 75-11-6, Diiodomethane 96-49-1, Ethylene carbonate 105-58-8, DiEthyl carbonate 108-32-7, Propylene carbonate 616-38-6, DimEthyl carbonate 627-31-6, 1,3-Diiodopropane 1307-96-6, Cobalt monoxide, uses 1313-13-9, Manganese dioxide, uses 1313-99-1, Nickel oxide (NiO), uses **1314-62-1**, Vanadia, uses 1317-34-6, Manganese oxide mn2o3 1317-35-7, Manganese oxide mn3o4 1335-25-7, Lead oxide 1343-98-2, Silicon hydroxide 1344-43-0, Manganese oxide mno, uses 1345-25-1, Iron oxide feo, uses 7226-23-5 7439-93-2, Lithium, uses 7439-93-2D, Lithium, intercalation compound 7440-21-3, Silicon, uses 7440-22-4, Silver, uses 7440-31-5, Tin, uses 7440-36-0, Antimony, uses 7440-42-8, Boron, uses 7440-44-0, Carbon, uses 7440-56-4, Germanium, uses 7440-66-6, Zinc, uses 7440-69-9, Bismuth, uses 7631-86-9, Silicon oxide, uses 7782-42-5, Graphite, uses 9003-53-6, Polystyrene 10043-35-3, Boric acid (H3BO3), uses 10361-43-0, Bismuth hydroxide 12002-78-7 12031-65-1, Lithium nickel oxide linio2 12037-30-8, **Vanadium oxide** v6o11 12048-27-0, Bili 12057-17-9, Lithium manganese oxide limn2o4 12057-22-6, LiZn 12057-30-6 12057-33-9 12063-07-9, Iron lithium oxide fe2lio4 12162-79-7, Lithium manganese oxide limno2 12190-79-3, Cobalt lithium oxide colio2 12253-44-0 12338-02-2 12651-23-9, Titanium hydroxide **13463-67-7, Titanium oxide**, uses 14475-63-9, Zirconium hydroxide Zr(OH)4 15365-14-7, Iron lithium phosphate felipo4 18282-10-5, Tin dioxide 21651-19-4, Tin oxide sno 24937-79-9, Polyvinylidene fluoride 25014-41-9, Polyacrylonitrile 25322-68-3, Peo 25322-69-4, Polypropylene oxide 37217-08-6, Lithium titanium oxide liti2o4 39345-91-0, Lead hydroxide 53262-48-9

55575-96-7, Lithium silicide Li13Si4 55608-41-8 56627-44-2
61812-08-6, Lithium silicide Li21Si8 66403-10-9, Lithium boride Li5B4
67070-82-0 71012-86-7, Lithium boride Li7B6 74083-26-4 76036-33-4,
Lithium silicide Li12Si7 106494-93-3, Lithium silicide Li21Si5
114778-10-8, Iron lithium sulfate Fe2Li2(SO4)3
144419-56-7, Cobalt lithium magnesium oxide Co0.95LiMg0.05O2 496816-56-9
496816-58-1, Iron lithium zirconium phosphate Fe0.98LiZr0.02(PO4)
531493-25-1, Iron lithium titanium phosphate (Fe0.98LiTi0.02(PO4))
RL: DEV (Device component use); USES (Uses)
(**battery** structures, self-organizing structures and related methods)

IT 99742-70-8, Poly(o-methoxyaniline) 104934-51-2, Poly(3-octylthiophene)
RL: MOA (Modifier or additive use); USES (Uses)
(**battery** structures, self-organizing structures and related methods)

IT **1303-86-2, Boron oxide** (**B2O3**), uses
1304-76-3, Bismuth oxide (Bi2O3), uses 1314-23-4, Zirconium oxide, uses
1314-56-3, Phosphorus oxide (P2O5), uses 1317-36-8, Lead oxide (PbO),
uses **7447-41-8, Lithium chloride**, uses
7789-24-4, Lithium fluoride, uses 10377-51-2, Lithium iodide
12057-24-8, Lithia, uses
RL: DEV (Device component use); USES (Uses)
(glass; **battery** structures, self-organizing structures and related methods)

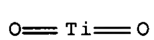
IT 7429-90-5, Aluminum, uses
RL: MOA (Modifier or additive use); USES (Uses)
(LiMnO2 doped with; **battery** structures, self-organizing structures and related methods)

IT **1314-62-1**, Vanadia, uses **13463-67-7, Titanium oxide**, uses
RL: DEV (Device component use); USES (Uses)
(**battery** structures, self-organizing structures and related methods)

RN 1314-62-1 HCAPLUS
CN Vanadium oxide (V2O5) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO2) (CA INDEX NAME)



IT **1303-86-2, Boron oxide** (**B2O3**), uses
7447-41-8, Lithium chloride, uses
12057-24-8, Lithia, uses
RL: DEV (Device component use); USES (Uses)
(glass; **battery** structures, self-organizing structures and related methods)

RN 1303-86-2 HCAPLUS
CN Boron oxide (B2O3) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7447-41-8 HCAPLUS
CN Lithium chloride (LiCl) (CA INDEX NAME)

Cl—Li

RN 12057-24-8 HCAPLUS
CN Lithium oxide (Li_2O) (CA INDEX NAME)

Li—O—Li

L80 ANSWER 5 OF 10 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2003:118181 HCAPLUS Full-text
DN 138:156304
TI **Battery** structures, self-organizing structures, and related methods
IN Chiang, Yet-Ming; Moorehead, William Douglas; Holman, Richard K.; Viola, Michael S.; Gozdz, Antoni S.; Loxley, Andrew; Riley, Gilbert N., Jr.
PA Massachusetts Institute of Technology, USA; A123 Systems
SO PCT Int. Appl., 138 pp.
CODEN: PIXXD2
DT **Patent**
LA English
FAN.CNT 5

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
PI	WO 2003012908	A2	20030213	WO 2002-US23880	20020726	<--
	WO 2003012908	A8	20040219			
	WO 2003012908	A9	20040325			
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW					
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG					
	US 2003082446	A1	20030501	US 2001-21740	20011022	<--
	CA 2455819	A1	20030213	CA 2002-2455819	20020726	<--
	AU 2002330924	A1	20030217	AU 2002-330924	20020726	<--
	EP 1433217	A2	20040630	EP 2002-768358	20020726	<--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK					
	JP 2005525674	T	20050825	JP 2003-517975	20020726	<--
	CN 1864298	A	20061115	CN 2002-818181	20020726	<--
	IN 2004KN00118	A	20060407	IN 2004-KN118	20040130	<--
PRAI	US 2001-308360P	P	20010727	<--		
	US 2001-21740	A	20011022	<--		
	US 2000-242124P	P	20001020	<--		
	WO 2002-US23880	W	20020726	<--		

AB An energy storage device includes a first electrode comprising a first material and a second electrode comprising a second material, at least a portion of the first and second materials forming an interpenetrating network when dispersed in an **electrolyte**, the **electrolyte**, the first material and the second material are selected so that the first and second materials exert a repelling force on each other when combined. An electrochem. device, includes

a first electrode in elec. communication with a first current collector; a second electrode in elec. communication with a second current collector; and an ionically conductive medium in ionic contact with the first and second electrodes, wherein at least a portion of the first and second electrodes form an interpenetrating network and wherein at least one of the first and second electrodes comprises an electrode structure providing two or more pathways to its current collector.

IC ICM **H01M0010-04**
ICS **H01M0010-40; H01M0004-04; H01M0004-02;**
H01B0009-00; G02F0001-00

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 72

ST **battery** structure self organizing structure

IT Phosphazenes
RL: DEV (Device component use); USES (Uses)
((methoxyethoxy)ethoxy; **battery** structures, self-organizing structures, and related methods)

IT **Battery** anodes
Battery cathodes
Conducting polymers
Embossing
Encapsulants
Ink-jet printing
Lithography
Polymer electrolytes
Primary batteries
Screen printing
(**battery** structures, self-organizing structures, and related methods)

IT Fluoropolymers, uses
Polyamines
Polyimides, uses
Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(**battery** structures, self-organizing structures, and related methods)

IT Polyesters, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(**battery** structures, self-organizing structures, and related methods)

IT Polyesters, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(**battery** structures, self-organizing structures, and related methods)

IT Glass, uses
RL: DEV (Device component use); USES (Uses)
(bismuth lithium borate; **battery** structures, self-organizing structures, and related methods)

IT Polymers, uses
RL: DEV (Device component use); USES (Uses)
(block, lithium salt-doped, **electrolyte**; **battery** structures, self-organizing structures, and related methods)

IT Electric apparatus
(electrochem.; **battery** structures, self-organizing structures, and related methods)

IT Polyoxyalkylenes, uses
RL: MOA (Modifier or additive use); USES (Uses)
(lithium complexes, perchlorate- or triflate-containing; **battery** structures, self-organizing structures, and related methods)

IT **Secondary batteries**

(lithium; **battery** structures, self-organizing structures, and related methods)

IT Composites
(nanocomposite; **battery** structures, self-organizing structures, and related methods)

IT Printing (nonimpact)
(stenciling; **battery** structures, self-organizing structures, and related methods)

IT Molding
(tape-casting; **battery** structures, self-organizing structures, and related methods)

IT Coating process
(web; **battery** structures, self-organizing structures, and related methods)

IT 7439-95-4, Magnesium, uses
RL: MOA (Modifier or additive use); USES (Uses)
(CoLiO2 doped with; **battery** structures, self-organizing structures, and related methods)

IT 7440-03-1, Niobium, uses 7440-25-7, Tantalum, uses 7440-32-6, Titanium, uses 7440-33-7, Tungsten, uses
RL: MOA (Modifier or additive use); USES (Uses)
(FeLiPO4 doped with; **battery** structures, self-organizing structures, and related methods)

IT 7429-90-5, Aluminum, uses
RL: MOA (Modifier or additive use); USES (Uses)
(LiMnO2 doped with; **battery** structures, self-organizing structures, and related methods)

IT 68-12-2, n,n-Dimethylformamide, uses 75-11-6, Diiodomethane 96-49-1, Ethylene carbonate 105-58-8, DiEthyl carbonate 108-32-7, Propylene carbonate 616-38-6, DimEthyl carbonate 627-31-6, 1,3-Diiodopropane 1307-96-6, Cobalt oxide coo, uses 1313-13-9, Manganese oxide mno2, uses 1313-99-1, Nickel oxide nio, uses 1314-23-4, Zirconium oxide, uses **1314-62-1**, Vanadia, uses 1317-34-6, Manganese oxide mn2o3 1317-35-7, Manganese oxide mn3o4 1335-25-7, Lead oxide 1344-43-0, Manganese oxidemno, uses 1345-25-1, Iron oxide feo, uses 7226-23-5 7439-93-2, Lithium, uses 7439-93-2D, Lithium, intercalation compound 7440-21-3, Silicon, uses 7440-22-4, Silver, uses 7440-31-5, Tin, uses 7440-36-0, Antimony, uses 7440-42-8, Boron, uses 7440-44-0, Carbon, uses 7440-56-4, Germanium, uses 7440-66-6, Zinc, uses 7440-69-9, Bismuth, uses 7782-42-5, Graphite, uses 9002-84-0, Ptfe 9003-53-6, Polystyrene 10361-43-0, Bismuth hydroxide 12002-78-7 12031-65-1, Lithium nickel oxide linio2 12037-30-8, **Vanadium oxide** v6o11 12042-37-4, Alli 12048-27-0, Bili 12057-17-9, Lithium manganese oxide limn2o4 12057-22-6, Lizn 12057-30-6 12057-33-9 12063-07-9, Iron lithium oxide fe2lio4 12162-79-7, Lithium manganese oxide limno2 12190-79-3, Cobalt lithium oxide colio2 12253-44-0 12338-02-2 12651-23-9, Titanium hydroxide **13463-67-7, Titanium oxide**, uses 14475-63-9, Zirconium hydroxide 15365-14-7, Iron lithium phosphate felipo4 18282-10-5, Tin dioxide 21324-40-3, Lithium hexafluorophosphate 21651-19-4, Tin oxide sno 24937-79-9, Polyvinylidene fluoride 25014-41-9, Polyacrylonitrile 25322-68-3, Peo 25322-69-4, Polypropylene oxide 37217-08-6, Lithium titanium oxide liti2o4 39345-91-0, Lead hydroxide 50851-57-5 53262-48-9 53640-36-1 55575-96-7, Lithium silicide Li13Si4 55608-41-8 56627-44-2 61812-08-6, Lithium silicide Li21Si8 66403-10-9, Lithium boride (Li5B4) 67070-82-0 71012-86-7, Lithium boride (Li7B6) 74083-26-4 76036-33-4, Lithium silicide Li12Si7 98973-15-0, MEEP 106494-93-3, Lithium silicide Li21Si5 126213-51-2, Poly(3,4-ethylenedioxythiophene) 144419-56-7, Cobalt lithium magnesium

oxide Co0.95LiMg0.05O2 496816-56-9 496816-57-0, Cobalt lithium magnesium oxide (Co0.95Li0.95Mg0.05O1.9) 496816-58-1, Iron lithium zirconium phosphate (Fe0.98LiZr0.02(PO4))
RL: DEV (Device component use); USES (Uses)
(**battery** structures, self-organizing structures, and related methods)

IT 76-05-1, Trifluoroacetic acid, uses 104-15-4, Toluene sulfonic acid, uses 7647-01-0, Hydrochloric acid, uses 57534-41-5, Zonyl FSN
RL: MOA (Modifier or additive use); USES (Uses)
(**battery** structures, self-organizing structures, and related methods)

IT 9002-88-4, Polyethylene 11099-11-9, **Vanadium oxide** 25038-59-9, Mylar, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(**battery** structures, self-organizing structures, and related methods)

IT 99742-70-8, Poly(o-methoxyaniline) 104934-51-2, Poly(3-octylthiophene)
RL: TEM (Technical or engineered material use); USES (Uses)
(coating; **battery** structures, self-organizing structures, and related methods)

IT 7440-50-8, Copper, uses
RL: DEV (Device component use); USES (Uses)
(current collector; **battery** structures, self-organizing structures, and related methods)

IT 7791-03-9, Lithium perchlorate 33454-82-9, Lithium triflate
RL: MOA (Modifier or additive use); USES (Uses)
(**electrolyte**, cog. polyethylene oxide; **battery** structures, self-organizing structures, and related methods)

IT **1303-86-2, Boron oxide b2o3**, uses 1304-76-3, Bismuth oxide bi2o3, uses 1314-56-3, Phosphorus pentoxide, uses 1317-36-8, Lead oxide pbo, uses **7447-41-8, Lithium chloride**, uses 7631-86-9, Silica, uses 7789-24-4, Lithium fluoride, uses 10377-51-2, Lithium iodide **12057-24-8**, Lithia, uses
RL: DEV (Device component use); USES (Uses)
(glass; **battery** structures, self-organizing structures, and related methods)

IT 7439-93-2D, Lithium, polyethylene oxide complexes 25322-68-3D, Peo, lithium complexes
RL: MOA (Modifier or additive use); USES (Uses)
(perchlorate- or triflate-containing; **battery** structures, self-organizing structures, and related methods)

IT 7429-90-5, Aluminum, uses
RL: MOA (Modifier or additive use); USES (Uses)
(LiMnO2 doped with; **battery** structures, self-organizing structures, and related methods)

IT **1314-62-1**, Vanadia, uses **13463-67-7, Titanium oxide**, uses
RL: DEV (Device component use); USES (Uses)
(**battery** structures, self-organizing structures, and related methods)

RN 1314-62-1 HCAPLUS
CN Vanadium oxide (V2O5) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO2) (CA INDEX NAME)

O═Ti═O

IT 1303-86-2, **Boron oxide b2o3**, uses
7447-41-8, **Lithium chloride**, uses
12057-24-8, Lithia, uses
RL: DEV (Device component use); USES (Uses)
(glass; **battery** structures, self-organizing structures, and related methods)
RN 1303-86-2 HCAPLUS
CN Boron oxide (B2O3) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 7447-41-8 HCAPLUS
CN Lithium chloride (LiCl) (CA INDEX NAME)

Cl—Li

RN 12057-24-8 HCAPLUS
CN Lithium oxide (Li2O) (CA INDEX NAME)

Li—O—Li

L80 ANSWER 6 OF 10 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2000:790239 HCAPLUS Full-text
DN 133:323990
TI High temperature lithium oxyhalide **electrochemical cell**
IN Spillman, David M.; Takeuchi, Esther S.
PA Wilson Greatbatch Limited, USA
SO Eur. Pat. Appl., 9 pp.
CODEN: EPXXDW
DT **Patent**
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1050913	A1	20001108	EP 2000-303777	20000505 <--
	EP 1050913	B1	20070124		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, CY				
	US 6569562	B1	20030527	US 2000-564401	20000501 <--
	JP 2001102015	A	20010413	JP 2000-172769	20000502 <--
	US 6410181	B1	20020625	US 2000-562532	20000502 <--
	AT 352876	T	20070215	AT 2000-303777	20000505 <--
	EP 1050912	B1	20070418	EP 2000-303789	20000505 <--
	R: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT, SE				
	JP 2001118584	A	20010427	JP 2000-176121	20000508 <--
PRAI	US 1999-132549P	P	19990505 <--		
	US 2000-562532	A	20000502 <--		
	US 2000-564401	A	20000501 <--		

AB An alkali metal **electrochem. cell** (particularly a lithium oxyhalide cell) comprises an alkali metal anode, a cathode, a catholyte, and a separator comprising E-glass material disposed between the anode and the cathode. The catholyte comprises an organic solvent or inorg. depolarizer solvent and preferably a casing houses the anode and the cathode. The oxyhalide cell exhibits superior restart characteristics by the provision of a MANNIGLASS 1200 separator.
IC ICM **H01M0002-16**
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium oxyhalide **battery**
IT Glass, uses
RL: DEV (Device component use); USES (Uses)
(E-glass; high temperature lithium oxyhalide **electrochem. cell**)
IT Primary **battery** separators
(MANNIGLASS 1200; high temperature lithium oxyhalide **electrochem. cell**)
IT Halides
Halides
Halogen compounds
Halogen compounds
RL: DEV (Device component use); USES (Uses)
(halogen halides; high temperature lithium oxyhalide **electrochem. cell**)
IT Carbonaceous materials (technological products)
Halogens
RL: DEV (Device component use); USES (Uses)
(high temperature lithium oxyhalide **electrochem. cell**)
IT **Primary batteries**
(lithium; high temperature lithium oxyhalide **electrochem. cell**)
IT 7440-02-0, Nickel, uses
RL: DEV (Device component use); USES (Uses)
(current collector; high temperature lithium oxyhalide **electrochem. cell**)
IT **1303-86-2, Boron oxide** ($B2O3$), uses
1305-78-8, Calcium oxide cao, uses 1309-48-4, Magnesia, uses
1313-59-3, Sodium oxide ($Na2O$), uses 1344-28-1, Alumina, uses
1345-25-1, Iron oxide feo, uses 7631-86-9, Silica, uses 12136-45-7, Potassium oxide ($K2O$), uses **13463-67-7, Titania**, uses
RL: DEV (Device component use); USES (Uses)
(glass; high temperature lithium oxyhalide **electrochem. cell**)
IT 67-68-5, Dmso, uses 68-12-2, uses 75-05-8, Acetonitrile, uses 108-32-7, Propylene carbonate 109-99-9, uses 127-19-5, Dimethyl acetamide 556-65-0, Lithium thiocyanate 865-44-1, Iodine trichloride 2923-17-3 2923-20-8 3982-91-0, Phosphorus sulfide trichloride **7447-41-8, Lithium chloride**, uses 7550-35-8, Lithium bromide 7553-56-2, Iodine, uses 7719-09-7, Thionyl chloride 7726-95-6, Bromine, uses 7782-41-4, Fluorine, uses 7782-50-5, Chlorine, uses 7783-66-6, Iodine pentafluoride 7787-71-5, Bromine trifluoride 7789-30-2, Bromine pentafluoride 7789-33-5, Iodine monobromide 7790-89-8, Chlorine monofluoride 7790-91-2, Chlorine trifluoride 7790-99-0, Iodine monochloride 7791-03-9, Lithium perchlorate 7791-23-3, Selenium oxychloride 7791-25-5, Sulfuryl chloride **12057-24-8, Lithium oxide**, uses 13453-75-3, Lithium fluorosulfate 13863-41-7, Bromine monochloride 13863-59-7, Bromine monofluoride 14024-11-4, Lithium tetrachloroaluminate 14283-07-9, Lithium tetrafluoroborate 14485-20-2, Lithium tetraphenyl borate 14977-61-8, Chromyl chloride 15955-98-3,

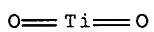
Lithium tetrachlorogallate 18424-17-4, Lithium hexafluoroantimonate
21324-40-3, Lithium hexafluorophosphate 22520-96-3, Iodine trifluoride
29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate
90076-65-6 115028-88-1 132404-42-3 134631-70-2 302904-70-7
RL: DEV (Device component use); USES (Uses)
(high temperature lithium oxyhalide **electrochem. cell**)

IT **1303-86-2, Boron oxide (B2O3)**, uses
13463-67-7, Titania, uses
RL: DEV (Device component use); USES (Uses)
(glass; high temperature lithium oxyhalide **electrochem. cell**)

RN 1303-86-2 HCAPLUS
CN Boron oxide (B2O3) (CA INDEX NAME)

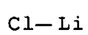
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO2) (CA INDEX NAME)

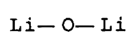


IT **7447-41-8, Lithium chloride**, uses
12057-24-8, Lithium oxide, uses
RL: DEV (Device component use); USES (Uses)
(high temperature lithium oxyhalide **electrochem. cell**)

RN 7447-41-8 HCAPLUS
CN Lithium chloride (LiCl) (CA INDEX NAME)



RN 12057-24-8 HCAPLUS
CN Lithium oxide (Li2O) (CA INDEX NAME)



RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Ensci Inc	1987			EP 0239343 A	HCAPLUS
Greatbatch W Ltd	1981			GB 2056752 A	HCAPLUS
Hobson, D	1998			US 5705293 A	HCAPLUS
Mitsubishi Paper Mills	1998			EP 0834936 A	HCAPLUS
Saft America Inc	1986			EP 0191569 A	HCAPLUS

L80 ANSWER 7 OF 10 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1997:92540 HCAPLUS Full-text
DN 126:201593
TI Novel materials for solid state **batteries**
AU Akhter, S. K.; Hashmi, R. A.; Rahman, R.
CS Department of Physics, University of Karachi, Karachi, 75270, Pak.
SO Advanced Materials--95, Proceedings of the International Symposium on

Advanced Materials, 4th, Islamabad, Pak., Sept. 17-21, 1995 (**1996**
), Meeting Date 1995, 139-148. Editor(s): ul Haq, Anwar. Publisher: Dr.
A.Q. Khan Research Laboratories, Kahuta, Rawalpindi, Pak.
CODEN: 63TEAY

DT Conference

LA English

AB The phys. properties of fast ion conducting glasses used as **electrolytes** for solid-state **batteries** are discussed. Glass transition temperature increased with the addition of another glass former in the binary system of lithium borate glasses. The d. and refractive index measurements indicate the composition effect in the system of lithium ion conducting glasses. Complex impedance spectroscopy measurements for elec. characterization are reported. In lithium borovanadate glasses the ionic conductivity reached a maximum value of 5.86 + 10-5/Ω-cm at 400 K. The value of activation energy is obtained as 0.54 eV. D.c. conductivity and dielec. relaxation time were found to be Arrhenius. Parameters such as energy d. and power d. of lithium-based **electrochem. cells** are indicated. The open-circuit voltage being constant over a longer period of time indicates the durability of the **electrolyte**.

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 57, 76

ST lithium ion conducting glass **electrolyte; battery**
lithium ion conducting glass **electrolyte;** borovanadate lithium glass **electrolyte battery;** borate lithium glass **electrolyte battery**

IT Borate glasses
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(lithium arsenoborate; properties of lithium ion conducting glass **electrolytes** for **batteries**)

IT Phosphate glasses
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(lithium arsenophosphate; properties of lithium ion conducting glass **electrolytes** for **batteries**)

IT Borate glasses
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(lithium borate; properties of lithium ion conducting glass **electrolytes** for **batteries**)

IT Borate glasses
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(lithium borovanadate; properties of lithium ion conducting glass **electrolytes** for **batteries**)

IT Phosphate glasses
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(lithium molybdophosphate; properties of lithium ion conducting glass **electrolytes** for **batteries**)

IT Phosphate glasses
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(lithium phosphovanadate; properties of lithium ion conducting glass **electrolytes** for **batteries**)

IT Electric conductivity
Electric impedance
(of lithium ion conducting glass **electrolytes** for **batteries**)

IT **Battery electrolytes**
(properties of lithium ion conducting glass **electrolytes** for **batteries**)

IT **1303-86-2, Boron oxide**, uses 1313-27-5, Molybdenum trioxide, uses 1314-56-3, Phosphorus pentoxide, uses **1314-62-1, Vanadium pentoxide**, uses 1327-53-3, Arsenic trioxide **7447-41-8, Lithium chloride**, uses **12057-24-8, Lithium**

oxide, uses
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(glass containing; properties of lithium ion conducting glass
electrolytes for **batteries**)

IT **1303-86-2, Boron oxide**, uses **1314-62-1**
, Vanadium pentoxide, uses **7447-41-8**,
Lithium chloride, uses **12057-24-8**,
Lithium oxide, uses
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(glass containing; properties of lithium ion conducting glass
electrolytes for **batteries**)

RN 1303-86-2 HCAPLUS
CN Boron oxide (B2O3) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 1314-62-1 HCAPLUS
CN Vanadium oxide (V2O5) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7447-41-8 HCAPLUS
CN Lithium chloride (LiCl) (CA INDEX NAME)

Cl—Li

RN 12057-24-8 HCAPLUS
CN Lithium oxide (Li2O) (CA INDEX NAME)

Li—O—Li

L80 ANSWER 8 OF 10 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1996:132462 HCAPLUS Full-text
DN 124:207057
TI Thin films of amorphous electrode materials for Li **microbatteries**
AU Ribes, M.; Guessous, A.; Sarradin, J.
CS LPMS, Universite Montpellier II, Montpellier, 34095, Fr.
SO Proceedings - Electrochemical Society (1996), 95-22(Thin Film Solid Ionic Devices and Materials), 164-72
CODEN: PESODO; ISSN: 0161-6374
PB Electrochemical Society
DT Journal
LA English
AB Several vitreous or amorphous thin films were prepared and characterized for use as components for **microbatteries** i.e. **electrolyte** or electrode depending upon their characteristics. In particular, the electrochem. behavior of amorphous Fe2O3 thin films was studied for the 1st time. These films were characterized by a good electrochem. reversibility and an interesting specific capacity (≈ 330 Ah/kg). They were combined with thin films of **V2O5-B2O3** mixed conducting glasses to test the feasibility of a rocking-chair **battery** using a liquid **electrolyte**.
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST thin film amorphous electrode lithium **microbattery**;
battery oxide sulfide electrode **electrolyte**

IT Electric conductivity and conduction
(of thin films of amorphous electrode and **electrolyte** materials for Li **microbatteries**)
IT **Batteries**, secondary
(thin films of amorphous electrode materials for Li **microbatteries**)
IT Glass, oxide
RL: DEV (Device component use); USES (Uses)
(vanadoborate, thin films of amorphous electrode materials for Li **microbatteries**)
IT **1303-86-2**, Boron sesquioxide, uses 1309-37-1, Iron sesquioxide, uses **1314-62-1**, **Vanadium pentoxide**, uses 1314-80-3, Phosphorus pentasulfide **7447-41-8**, **Lithium chloride**, uses 10377-51-2, Lithium iodide **12057-24-8**, **Lithium oxide**, uses 12136-58-2, Lithium sulfide 13759-10-9, Silicon disulfide
RL: DEV (Device component use); USES (Uses)
(thin films of amorphous electrode materials and **electrolytes** for Li **microbatteries** containing)
IT 7439-93-2, Lithium, uses
RL: DEV (Device component use); USES (Uses)
(thin films of amorphous electrode materials for Li **microbatteries**)
IT **1303-86-2**, Boron sesquioxide, uses **1314-62-1**, **Vanadium pentoxide**, uses **7447-41-8**, **Lithium chloride**, uses **12057-24-8**, **Lithium oxide**, uses
RL: DEV (Device component use); USES (Uses)
(thin films of amorphous electrode materials and **electrolytes** for Li **microbatteries** containing)
RN 1303-86-2 HCAPLUS
CN Boron oxide (B2O3) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 1314-62-1 HCAPLUS
CN Vanadium oxide (V2O5) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 7447-41-8 HCAPLUS
CN Lithium chloride (LiCl) (CA INDEX NAME)

Cl— Li

RN 12057-24-8 HCAPLUS
CN Lithium oxide (Li2O) (CA INDEX NAME)

Li— O— Li

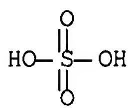
L80 ANSWER 9 OF 10 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1989:537484 HCAPLUS Full-text
DN 111:137484
TI New positive-electrode materials for lithium thin film secondary **batteries**

AU Meunier, G.; Dormoy, R.; Levasseur, A.
CS Lab. Chim. Solide, Ec. Natl. Super. Chim. Phys. Bordeaux, Talence, F-33405, Fr.
SO Materials Science & Engineering, B: Solid-State Materials for Advanced Technology (**1989**), B3(1-2), 19-23
CODEN: MSBTEK; ISSN: 0921-5107
DT Journal
LA English
AB Thin films of Ti oxysulfides (TiSxOy) were obtained by rf sputtering on Pt- or ITO-coated glass and used as intercalation cathodes in solid-state **microbatteries** with ternary sputtered oxide glass (**B2O3- Li2O-Li2SO4**) as **electrolyte** and evaporated Li as anode. The oxysulfide films were amorphous and hygroscopic; a homogeneous distribution of Ti, S, and O throughout the film was observed by SIMS profiling. More than 50 cycles were obtained at c.d. of ≤62 μA/cm2; the materials were chemical stable and no irreversible reactions occurred between electrode and **electrolyte** materials.
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 57, 72
ST titanium oxysulfide lithium intercalation cathode; lithium titanium oxisulfide **battery** stability; **boron oxide** glass **electrolyte battery**; glass **electrolyte battery lithium sulfate; electrolyte battery lithium oxide** glass
IT Sputtering
(of titanium oxysulfide, for lithium intercalation **microbattery** with oxide glass **electrolyte**)
IT Cathodes
(**battery**, titanium oxysulfide, preparation and lithium intercalation by, in **microbattery** with oxide glass **electrolyte**)
IT Inclusion reaction
(intercalation, electrochem., of lithium, by titanium oxysulfide, in **microbattery** with oxide glass **electrolyte**)
IT Glass, oxide
RL: USES (Uses)
(lithium borate sulfate, **electrolyte**, lithium-titanium oxysulfide intercalation **microbattery** with, fabrication and performance of)
IT 122827-51-4P, Titanium oxide sulfide (TiO0.2S1.8)
122827-52-5P, Titanium oxide sulfide (TiO0.97S1.11)
122827-53-6P, Titanium oxide sulfide (TiO2.15S0.18) 122827-54-7P, Titanium oxide sulfide (TiO1.3S1.5) 122827-55-8P, Titanium oxide sulfide (TiO0.7S1.5) 122827-56-9P, Titanium oxide sulfide (TiO1.14S1.42)
RL: PREP (Preparation)
(cathodes, preparation and lithium intercalation by, in **microbattery** with oxide glass **electrolyte**)
IT 7440-06-4P, Platinum, uses and miscellaneous 50926-11-9P, ITO
RL: PREP (Preparation)
(current collectors, titanium oxysulfide film cathode on, preparation and lithium intercalation by, in **microbattery** with oxide glass **electrolyte**)
IT **10377-48-7, Lithium sulfate** (**Li2SO4**)
12057-24-8, Lithium oxide (**Li2O**), uses and miscellaneous
RL: USES (Uses)
(glass **electrolyte** containing, lithium-titanium oxysulfide intercalation **microbattery** with, fabrication and performance of)

IT 7439-93-2, Lithium, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(intercalation of, by titanium oxysulfide, in **microbattery** with oxide glass **electrolyte**)

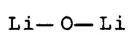
IT **10377-48-7, Lithium sulfate** (Li_2SO_4) **12057-24-8, Lithium oxide** (Li_2O), uses and miscellaneous
RL: USES (Uses)
(glass **electrolyte** containing, lithium-titanium oxysulfide intercalation **microbattery** with, fabrication and performance of)

RN 10377-48-7 HCAPLUS
CN Sulfuric acid, lithium salt (1:2) (CA INDEX NAME)



●2 Li

RN 12057-24-8 HCAPLUS
CN Lithium oxide (Li_2O) (CA INDEX NAME)



L80 ANSWER 10 OF 10 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1979:141357 HCAPLUS Full-text
DN 90:141357
TI Amorphous cation conductive material based on lithium
IN Reau, Jean Maurice; Levasseur, Alain; Fouassier, Claude; Cales, Bernard; Hagenmuller, Paul
PA Compagnie Generale d'Electricite S. A., Fr.
SO Ger. Offen., 16 pp.
CODEN: GWXXBX
DT **Patent**
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 2815437	A1	19781019	DE 1978-2815437	19780410 <--
	FR 2387192	A1	19781110	FR 1977-11376	19770415 <--
	FR 2387192	B1	19820521		
	GB 1595632	A	19810812	GB 1978-13968	19780410 <--
	JP 53128732	A	19781110	JP 1978-43370	19780414 <--
	US 4184015	A	19800115	US 1978-896527	19780417 <--
PRAI	FR 1977-11376	A	19770415 <--		

AB Cationically conductive Li borate glass was prepared and contained a compound with the general formula (**B2O3**.xM.yN).aLi2O.bLizQ, where M is Al2O3, V2O5, P2O5, As2O5, or As2O3, N is SiO2 or GeO2, x is 0-0.35, y is 0-0.8, a is 0-2, b is 0-1.5, and Q is mono-, di-, or trivalent anion, which dets. whether z is 1, 2, or 3, and is F-, Cl-, Br-, S2-, SO42-, MoO42-, WO42-, N3-, or PO43-. The

raw materials required are **Li2O**, **B2O3**, Li2O3, or LiOH. They are mixed, held at 700-1200° for 5 min, quenched, and calcined at 50° below the recrystn. point for 15 h.

IC C03C0003-14
CC 57-1 (Ceramics)
Section cross-reference(s): 76
IT **7447-41-8**, uses and miscellaneous **12057-24-8**, uses and miscellaneous
RL: USES (Uses)
(glass, cationically conductive)
IT **7447-41-8**, uses and miscellaneous **12057-24-8**, uses and miscellaneous
RL: USES (Uses)
(glass, cationically conductive)
RN 7447-41-8 HCAPLUS
CN Lithium chloride (LiCl) (CA INDEX NAME)

Cl—Li

RN 12057-24-8 HCAPLUS
CN Lithium oxide (Li2O) (CA INDEX NAME)

Li—O—Li

=> => fil wpix
FILE 'WPIX' ENTERED AT 09:11:23 ON 01 MAY 2007

FILE LAST UPDATED: 26 APR 2007 <20070426/UP>
MOST RECENT THOMSON SCIENTIFIC UPDATE: 200727 <200727/DW>
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>>> New display format FRAGHITSTR available <<<
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http://www.stn-international.de/archive/stn_online_news/fraghitstr_ex.pdf

>>> IPC Reform backfile reclassification has been loaded to 31 December 2006. No update date (UP) has been created for the reclassified documents, but they can be identified by 20060101/UPIC and 20061231/UPIC. <<<

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http://www.stn-international.de/training_center/patents/stn_guide.pdf

FOR DETAILS OF THE PATENTS COVERED IN CURRENT UPDATES, SEE
http://scientific.thomson.com/support/patents/coverage/latestupdates/

PLEASE BE AWARE OF THE NEW IPC REFORM IN 2006, SEE
http://www.stn-international.de/stndatabases/details/ipc_reform.html and
http://scientific.thomson.com/media/scpdf/ipcrdwpi.pdf

>>> FOR DETAILS ON THE NEW AND ENHANCED DERWENT WORLD PATENTS INDEX
PLEASE SEE
http://www.stn-international.de/stndatabases/details/dwpi_r.html <<<
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L111 ANSWER 1 OF 5 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN
AN 2004-582891 [57] WPIX Full-text
DNC C2004-212670 [57]
DNN N2004-460672 [57]
TI Solid **electrolyte** for lithium or thin film battery comprises composition comprising **titanium dioxide**, **vanadium pentaoxide**, **tungsten oxide**, or **tantalum pentaoxide**, and **lithium chloride** or **lithium sulfate**
DC L03; X16
IN JIN Y; JIN Y G; LEE J; LEE J H; LEE S; LEE S S; PARK Y; PARK Y S; RI S
PA (SMSU-C) SAMSUNG ELECTRONICS CO LTD
CYC 34

PIA	EP 1443582	A1	20040804	(200457)*	EN	15[3]
	JP 2004235155	A	20040819	(200457)	JA	14
	US 20040151986	A1	20040805	(200457)	EN	
	KR 2004069752	A	20040806	(200480)	KO	
	KR 513726	B	20050908	(200680)	KO	

ADT EP 1443582 A1 EP 2004-250404 20040126; KR 2004069752 A **KR 2003-6288 20030130**; US 20040151986 A1 US 2004-757500 20040115; JP 2004235155 A JP 2004-24681 20040130; KR 513726 B **KR 2003-6288 20030130**
FDT KR 513726 B Previous Publ KR 2004069752 A
PRAI **KR 2003-6288** 20030130
AB EP 1443582 A1 UPAB: 20050531
NOVELTY - A solid **electrolyte** comprises a composition comprising **titanium dioxide**, **vanadium pentaoxide**, **tungsten oxide**, or **tantalum pentaoxide**; and **lithium chloride**, or **lithium sulfate**.
DETAILED DESCRIPTION - The solid **electrolyte** comprises composition of formula aLi2O-bB2O3-cM-dX. M = **titanium dioxide**, **vanadium pentaoxide**, **tungsten oxide**, or **tantalum pentaoxide**; and
X = **lithium chloride**, or **lithium sulfate**.
0.4 less than a less than 0.55, 0.4 less than b less than 0.55, 0.02 less than c less than 0.05, a+b+c = 1, and
0 at most d less than 0.2.
An INDEPENDENT CLAIM is also included for a method for preparing the solid **electrolyte** comprising: mixing **lithium oxide** precursor compound, **boron oxide**, and compound consisting of **titanium dioxide**, **vanadium pentaoxide**, **tungsten oxide**, and **tantalum pentaoxide**, followed by milling; heating the resultant powder mixture so that **lithium oxide** precursor compound is thermally decomposed into **lithium oxide**; heating the resultant mixture to obtain a uniformly molten glass; and quenching the molten glass to obtain a glassy solid **electrolyte**.
USE - Used for lithium battery or thin film battery (claimed).
ADVANTAGE - The **electrolyte** has improved ionic conductivity and electrochemical stability. It provides batteries having improved charge-

discharge rate, power output, and cycle life. DESCRIPTION OF DRAWINGS - The figure is a graph of temperature profile for glassy **electrolyte** preparation.
TECH
INORGANIC CHEMISTRY - Preferred Properties: (a) is 0.45-0.52, (b) is 0.45-0.52, (c) is 0.03-0.04, and (d) is 0.001-0.15.
Preferred Methods: **Lithium chloride** or **lithium sulfate** is added to the mixture. **Lithium oxide** is decomposed at 600-800degreesC. The molten glass is obtained at 900-1500degreesC. It is quenched at 0-25degreesC.

L111 ANSWER 2 OF 5 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN
AN 2004-224380 [21] WPIX Full-text
DNC C2004-088540 [21]
DNN N2004-177199 [21]
TI Electrode for use in conjunction with **electrolyte** in electrochemical device, comprises first layer comprising electroactive material, and second layer comprising conductive particles
DC A26; A85; L03; P54; X16
IN CHIANG Y; GOZDZ A S; HOLMAN R K; LOXLEY A; NUNES B; OSTRAAT M; RILEY G N; VIOLA M S; CHIANG Y M; LOXLEY A L
PA (AONE-N) A123 SYSTEMS INC
CYC 100
PIA US 20040018430 A1 20040129 (200421)* EN 28[6]
WO 2004011901 A2 20040205 (200421) EN
AU 2003281736 A1 20040216 (200453) EN
AU 2003281736 A8 20051103 (200629) EN
US 7087348 B2 20060808 (200652) EN
ADT US 20040018430 A1 Provisional **US 2002-398697P 20020726**; US 20040018430 A1 **US 2003-354405 20030130**; AU 2003281736 A1 AU 2003-281736 20030722; WO 2004011901 A2 WO 2003-US22954 20030722; AU 2003281736 A8 AU 2003-281736 20030722
FDT AU 2003281736 A1 Based on WO 2004011901 A; AU 2003281736 A8 Based on WO 2004011901 A
PRAI **US 2003-354405 20030130**
US 2002-398697P 20020726
AB US 20040018430 A1 UPAB: 20050528
NOVELTY - An electrode for use in conjunction with an **electrolyte** or its precursor in an electrochemical device, comprises a first layer comprising an electroactive material, and a second layer comprising conductive particles. The second layer has a refractive index lower than that of the electroactive material and lower than the refractive index of the **electrolyte** or its precursor.
DETAILED DESCRIPTION - An electrode for use in conjunction with an **electrolyte** or its precursor in an electrochemical device, comprises a first layer comprising an electroactive material; and a second layer deposited on the surface of the first layer comprising conductive particles. The second layer has a refractive index lower than a refractive index of the electroactive material and lower than the refractive index of the **electrolyte** or its precursor.
INDEPENDENT CLAIMS are also included for: (a) an electrochemical device, comprising a first electrode in electronic communication with a first current collector; a second electrode in electronic communication with a second current collector; and an **electrolyte** in ionic contact with the first and second electrodes, where the first and/or second electrodes include electrically connected, coated particles comprising an electroactive material and a layer comprising a conductive material, and sufficient low index material such that the refractive index of the layer is less than that of the **electrolyte** or an **electrolyte** precursor, where the layer substantially coats an outer surface of the electroactive material; (b) an electrode material for use in conjunction with an **electrolyte** or its precursor in an electrochemical

device, comprising electrically connected coated particles comprising an electroactive material and a layer comprising a conductive material substantially coating an outer surface of the electroactive material and having an electronic conductivity greater than about 2 S/cm and a Young's modulus less than 100 GPa;
(c) a coated particle, comprising a core of electroactive material; and a layer deposited on an outer surface of the electroactive material, the layer substantially coating an outer surface of the electroactive material and comprising a network of electrically connected conductive material occupying a region between particles of a low refractive index material;
(d) a polymer composition, comprising a homogeneous mixture of a conductive polymer and a low refractive index polymer, where the mixture is a dispersion, a solution-dispersion, or a solution; (e) a dispersion comprising a highly fluorinated polymer and particles of an electrically conductive polymer; (f) a composite coating comprising a low refractive index material and an electrically conductive material; (g) a dispersion comprising a non-coalescing, non-deforming component; a soluble, polymeric film forming component; and a conductive component, that is deformable, in a swollen state or a colloid of dimensions that can be easily be located within the open volume produced by the non coalescing particles;
(h) a method of preparing an electrochemical device comprising combining first particles, second particles, and a polymer **electrolyte** or its precursor, the first and second particles are selected to exert a repelling force on each other when combined with the polymer **electrolyte** or its precursor, where the first and/or second particles comprise an electroactive material and a layer comprising a conductive material and sufficient low index material such that the refractive index of the layer is less than that of the **electrolyte** or an **electrolyte** precursor, where the layer substantially coats an outer surface of the electroactive material; segregating portion(s) of the first particle into a first spatial region that is essentially free of the second particle to form a network of electrically-connected first components to form a first electrode; and segregating portion(s) of the second particle into a second spatial region that is essentially free of the first particle to form a network of electrically connected second particles to form the second electrode, where the polymer **electrolyte** is in ionic communication with both the first and second electrodes;
(i) a method of making an electrode material for use in conjunction with an **electrolyte** or its precursor in an electrochemical device, comprising preparing a dispersion or solution comprising a conductive material and a low refractive index material; depositing the dispersion or solution as a layer onto an outer surface of an electroactive material, where the layer comprises an electrically connected network of conductive material on the electroactive material; (j) a method of making a stable dispersion, comprising selecting a conductive material; selecting a low refractive index material having a refractive index less than the conductive material; selecting a coalescing agent; and mixing the conductive material, the low refractive index material, and the coalescing agent until a homogenous dispersion or solution is obtained;
(k) a method of screening sample materials capable of exerting repelling forces with electrode materials used in the fabrication of create self-organizing battery devices, comprising preparing a particle or coating of the sample material; preparing a particle of a predetermined electrode material; selecting an **electrolyte** or its precursor in physical and chemical contact with the sample material and electrode material; and measuring the interaction force between the particle of sample material and the predetermined electrode material to determine whether the particles repel one another in the presence of the conductive medium, where the interaction force is measured by atomic force microscopy; and
(l) an electrochemical device, comprising a first electrode in electronic communication with a first current collector; a second electrode in electronic

communication with a second current collector; and an **electrolyte** in ionic contact with said first and second electrodes, where the first and/or second electrodes include electrically connected, coated particles comprising an electroactive material and a layer comprising a conductive material substantially coating an outer surface of the electroactive material, where the layer has an electronic conductivity greater than 2 S/cm and is free of elemental carbon.
USE - For use in conjunction with an **electrolyte** or its precursor in an electrochemical device (claimed).
ADVANTAGE - The inventive electrode has conductive materials that provide a combination of enough electronic and ionic conductivity, and electrochemical stability to produce batteries with long cycle life and high power density.
DESCRIPTION OF DRAWINGS - The figure shows a schematic illustration of two adjacent encapsulated electroactive particles.

TECH

ELECTRICAL POWER AND ENERGY - Preferred Composition: The low index material comprises at least50 wt % of the layer or of the latex dispersion content.
Preferred Component: The layer of particles comprises a continuous network of electrically connected conductive material. The layer further includes a filler material that is dissolvable upon contact with an **electrolyte** solution. The first electrode is a cathode. The second electrode is an anode. The first layer is a thin film. The conductive particles comprise a conductive oxide. The conductive material is electrically connected. The separating medium is a dielectric medium.
Preferred Configuration: The electrically conductive material occupies a region between the particles of the low index material.
Preferred Function: The adjacent coated particles of like composition of the layer exert attractive forces such that elastic deformation occurs at a surface contact interface between the adjacent particles.
Preferred Material: The conductive material is ionically conductive, or electrically conductive. The electroactive material of the first and/or second electrode includes a lithium intercalating material.
Preferred Condition: The layer includes a material with a refractive index lower than 2.0, preferably lower than 1.4. It also includes a conductive material having electronic conductivity of at least10-2, preferably at least10 S/cm. The second layer has an electronic conductivity greater than 10-2 S/cm; an ionic conductivity greater than 10-7 S/cm; and a thickness of 0.05-1 mum. The layer includes a conductive material having ionic conductivity of at least10-7 S/cm. The layer includes a conductive material having ionic conductivity of at least10-6 S/cm. The layer has a thickness less than 1, preferably less than 0.05 mum. A Hamaker constant characterizing the interaction between the first and the second electrodes in **electrolyte** or its precursor is negative. The low refractive index material has a refractive index lower than the refractive index of the electroactive material. The lateral dimension of the conductive material in the plane of the coating is less than 0.25 mum. The lateral dimension of the conductive material of the composite is less than 0.1, preferably less than 0.025 mum.
Preferred Method: The dispersion or solution is deposited on the surface of the electroactive material by a physical, chemical or mechanical deposition process. The physical deposition process includes a vapor phase or ablation based process. The chemical deposition process includes in situ polymerization, coacervation, precipitation, or a sol-gel process. The mechanical deposition process includes roll coating, casting, electrospray, thermal spray, ultrasonic spray, powder coating, fluidized bed coating, dispersion coating, magnetically assisted impact coating, or mechanofusion.
POLYMERS - Preferred Material: The low index material or the secondary material comprises fluorinated polymers, preferably

polytetrafluoroethylene, poly(vinylidene fluoride), poly(fluoroalkyl acrylate), poly(fluoroalkyl methacrylate), polypropylene, **vanadium oxide**, fluorinated esters of methacrylic acid, or fluorinated esters of acrylic acids. The electrically conductive material and/or the secondary material comprise elastic materials that are readily deformable by application of mechanical or thermal energy. The conductive material is a conductive polymer comprising polyanilines, polythiophenes, polypyrroles, copolymers, or their derivatives (preferably poly(3,4-ethylene dioxythiophene), poly(2-methoxyaniline), or poly(3-octylthiophene)).

Preferred Component: The second layer includes a polymer blend comprising conductive particles. The conductive polymer further includes a dopant that increases the conductivity of the conducting polymer. The **electrolyte** comprises a solid polymer **electrolyte**, preferably poly(ethylene oxide), poly(styrene), poly(acrylonitrile), poly(vinylidenefluoride), ethylene carbonate, diethyl carbonate, dimethyl carbonate, propylene carbonate, or a block copolymer). The low refractive index material consists of a fluorinated polymer. The dispersion comprises particles of carbon dispersed in a solution of fluorinated polymer.

Preferred Composition: The polymer composition further comprises water, and a coalescing agent.

CERAMICS AND GLASS - Preferred Component: The **electrolyte** comprises a glass comprising lithium iodide, lithium fluoride, **lithium chloride**, glassy compositions of **lithium oxide-boron oxide**-bismuth oxide, glassy compositions of **lithium oxide-boron oxide**-diphosphorus pentoxide, glassy compositions of **lithium oxide-boron oxide**, lead oxide, a sol or gel of the oxides, and/or hydroxides of titanium, zirconium, lead, molybdenum, tungsten, silicon, germanium, aluminum, boron, phosphorus, or bismuth.

ORGANIC CHEMISTRY - Preferred Component: The coalescing agent comprises N-methyl-2-pyrrolidinone, glycol ether, a glycol ether acetate, or dibutylphthalate.

INORGANIC CHEMISTRY - Preferred Component: The conductive material includes a conductive oxide, comprising **vanadium oxide**, indium tin oxide, lithium cobalt oxide, **titanium oxide**, or their alloys. It also includes a metal, metal carbide, a metal sulfide, and/or carbon. The conductive particles comprise carbon. The conductive component is metallic colloid, or gold particles.

Preferred Material: The electroactive material of the first electrode comprises lithium cobaltite, lithium cobaltite doped with magnesium, lithium nickelite, lithium manganate, lithium manganate doped with aluminum, lithium iron phosphate, lithium manganese phosphate, LixV6O13, Li2Fe2(SO4)3, **vanadium oxide**, V6O11, and/or tin oxide.

The electroactive material of the second electrode comprises carbon, amorphous carbon, graphite, mesocarbon microbeads, lithium, lithium aluminum, Li9Al4, Li3Al, zinc, lithium zinc, silver, lithium silver, Li10Ag3, boron, Li5B4, Li7B6, germanium, silicon, Li12Si7, Li21Si8, Li13Si4, Li21Si5, tin, Li5Sn2, Li13Sn5, Li7Sn2, Li22Sn5, antimony, Li2Sb, Li3Sb, bismuth, lithium bismuth, Li3Bi, tin dioxide, tin oxide, manganese oxide, Mn2O3, manganese dioxide, Mn3O4, cobalt oxide, nickel oxide, ferrous oxide, LiFe2O4, **titanium dioxide**, lithium titanate, and/or glass.

ABEX EXAMPLE - An aqueous dispersion of poly(3,4 ethylene dioxythiophene)-polystyrene sulfonate (PEDT-PSS) (1.3 wt.%) was mixed with an aqueous dispersion of polytetrafluoroethylene (PTFE). The PEDT-PSS and PTFE particles had been cleansed of residual surfactant by exhaustive dialysis against pure water. A minimum amount of non-ionic, perfluorinated surfactant was added to aid final dispersion stability. The resulting

PEDT-PSS/PTFE mixture was prepared such that the ratio of solids of PEDT-PSS/PTFE was 1:9. The volume of LixMnyCoO2 (LMCO) powder to be added to this mixture was calculated such that the volume of LMCO:(PEDT-PSS/PTFE) was 95:5. Z volume of water equal to the calculated volume of LMCO was added to the mixture to dilute it, and LMCO was added under high shear mixing to produce a well-dispersed mixture. This mixture was calculated to posses' solids loading of 50 vol.% and a mass ratio of LMCO:(PEDT-PSS/PTFE) of 95:4.5:0.5. This mixture was spray dried to form LMCO particles encapsulated with the conductive polymer system comprising PEDT-PSS and PTFE.

L111 ANSWER 3 OF 5 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN
AN 2004-156916 [15] WPIX Full-text
DNC C2004-062473 [15]
DNN N2004-125561 [15]
TI Bipolar article, e.g. battery for battery-powered device, comprises bipolar structure having interpenetrating anode and cathode
DC A85; L03; P42; T01; V01; W01; X16
IN CHIANG Y M; FULOP R; GOZDZ A S; RILEY G N; VIOLA M S
PA (AONE-N) A123 SYSTEMS INC
CYC 100
PIA WO 2004012286 A1 20040205 (200415)* EN 62[12]
AU 2003259271 A1 20040216 (200453) EN
US 20050026037 A1 20050203 (200511) EN
ADT WO 2004012286 A1 WO 2003-US23581 20030728; US 20050026037 A1 Provisional **US 2002-398902P 20020726**; US 20050026037 A1 Provisional **US 2002-399050P 20020726**; AU 2003259271 A1 AU 2003-259271 20030728; US 20050026037 A1 US 2003-628681 20030728
FDT AU 2003259271 A1 Based on WO 2004012286 A
PRAI **US 2002-399050P 20020726**
US 2002-398902P 20020726
US 2003-628681 20030728
AB WO 2004012286 A1 UPAB: 20050906
NOVELTY - A bipolar article having an arbitrary form factor comprises bipolar structure having:
(a) interpenetrating anode (104) and cathode (102); (b) **electrolyte** (106) in contact with and separating the anode and cathode;
(c) a cathode current collector that is in electronic communication with the cathode; and
(d) an anode current collector that is in electronic communication with the anode.
The bipolar article has a desired arbitrary configuration.
DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for: (a) a battery powered device comprising an interpenetrating electrode battery; housing; and a mechanism powered by the battery that is integrated in the housing; and (b) a method of making a bipolar article having an arbitrary form factor comprising providing a first current collector in a mold having a configuration corresponding to the desired arbitrary form factor; depositing on the first current collector a first electrode material, an **electrolyte** material and a second electrode material, where the electrode material is configured to have features projecting into the **electrolyte** material and the other electrode material; and providing a second current collector on the first electrode, **electrolyte** and second electrode materials.
USE - The bipolar article, e.g. battery, is used for battery powered device e.g. cellular telephone, laptop computer, personal digital assistant or toy (claimed).
ADVANTAGE - The bipolar article provides efficient use of space in the device.
DESCRIPTION OF DRAWINGS - The figure is an illustration of the cell having interpenetrating electrodes. Cell (100)
Cathode (102)

Anode (104)
Electrolyte (106)
Electrode extension (108)

TECH

ELECTRICAL POWER AND ENERGY - Preferred Component: The anode and cathode are self-assembling networks of particles disposed in the **electrolyte**. The cathode current collector is attractive to the cathode network and repulsive to the anode network. The anode current collector is attractive to the anode network and repulsive to the cathode network. The anode and cathode current collectors comprise coating providing a repulsive force between the current collector and the opposite anode or cathode network. The anode and cathode current collector include projecting features. The projecting features are prongs or mesh.
Preferred Property: The bipolar article has a power density of more than 300 W/kg. A multilayered lithium ion battery has an energy density of more than 212 Wh/kg.
Preferred Dimension: The minimum distance between adjacent current collectors is at least 500, preferably 1,000 microns. The mesh layer defines openings, each having a width of more than 200 microns.
POLYMERS - Preferred Component: The coating includes a conductive oxide, polythiophene, polyanaline, poly(o-methoxyaniline) (POMA), poly(3-octylthiophene) (POTh), poly(3,4-ethylene dioxythiophene) (PEDT), poly(3,4 ethylene dioxythiophene)-polystyrene sulfonate (PEDT-PSS), poly(vinylidene fluoride) (PVDF), poly(ethylene oxide) (PEO), PTFE and/or their derivatives. The **electrolyte** can be PEO, poly(styrene), poly(acrylonitrile), PVDF, diiodomethane (DIM), 1,3-diiodopropane, N,N-dimethylformamide, dimethylpropylene urea, ethylene carbonate, diethylene carbonate, dimethyl carbonate, propylene carbonate or block copolymer lithium **electrolytes**.
ELECTRONICS - Preferred Device: The device has a cavity. The arbitrary configuration of the bipolar article is space-filling within the cavity.
INORGANIC CHEMISTRY - Preferred Material: The anode is made from carbon, amorphous carbon, graphite, mesocarbon microbeads, lithium (Li), Li-aluminum, Li9Al4 (sic), Li3Al (sic), zinc (Zn), Li-Zn, silver (Ag), Li-Ag, Li10Ag3 (sic), boron, lithium boride, Li7Be6 (sic), germanium, silicon, Li12Si7 (sic), Li21Si8 (sic), Li13Si4 (sic), Li21Si5 (sic), tin (Sn), Li5Sn2, Li13Sn5, Li7Sn2, Li22Sn5, antimony, lithium antimonide, Li3Sb (sic), bismuth (Bi), Li-Bi, Li3Bi, tin dioxide, tin oxide, manganese oxide, manganese (II) oxide, manganese dioxide, manganese (III) oxide, cobalt oxide, nickel oxide, iron oxide, LiFe2O4, **titanium dioxide**, LiTi2O4 (sic) or glass. The cathode is made from lithium cobalt oxide (LiCoO2), LiCoO2 doped with magnesium, lithium nickel dioxide, lithium manganese dioxide, lithium manganese dioxide (LiMnO2), LiMnO2 doped with aluminum, doped and undoped lithium iron phosphate, lithium manganese phosphate, LixV6O13 (sic), Li2Fe2(SO4)3 (sic), **vanadium oxide**, V6O11 (sic) or tin oxide. The **electrolyte** can be lithium iodide, lithium fluoride, **lithium chloride**, lithium (II) oxide (**Li2O**)-**boron oxide** (**B2O3**)- bismuth oxide compounds, **Li2O-B2O3**-phosphorus oxide compounds, **Li2O-B2O3**-lead oxide compounds or sols and gels of oxides and hydroxides of titanium, zirconium, lead, and Bi.

L111 ANSWER 4 OF 5 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN
AN 2003-342396 [32] WPIX Full-text
CR 2002-490234; 2004-179375; 2006-037226
DNC C2003-121938 [44]
DNN N2003-364052 [44]
TI Self-organizing electrodes for electrochemical devices such as secondary batteries comprises forming interlocked networks electrodes from two sets

of mutually repelling self attractive materials that are connected to collectors

DC A85; L03; P81; V01; X12; X16

IN CHIANG Y; CHIANG Y M; GOZDZ A S; HOLMAN R K; LOXLEY A; MOOREHEAD W D; RILEY G N; VIOLA M S

PA (AONE-N) A123 SYSTEMS INC; (AONE-N) A123SYSTEMS INC; (MASI-C) MASSACHUSETTS INST TECHNOLOGY; (AONE-N) A123 SYSTEMS

CYC 99

PIA WO 2003012908 A2 20030213 (200332)* EN 136[30]
US 20030099884 A1 20030529 (200337) EN
EP 1433217 A2 20040630 (200443) EN
AU 2002330924 A1 20030217 (200452) EN
KR 2004047780 A 20040605 (200465) KO
JP 2005525674 W 20050825 (200560) JA 85
IN 2004000118 P2 20060407 (200636) EN
AU 2002330924 A8 20051027 (200638) EN
CN 1864298 A 20061115 (200720) ZH

ADT WO 2003012908 A2 **WO 2002-US23880 20020726**; US 20030099884 A1 Provisional **US 2001-308360P 20010727**; US 20030099884 A1 CIP of **US 2001-21740 20011022**; AU 2002330924 A1 **AU 2002-330924 20020726**; AU 2002330924 A8 **AU 2002-330924 20020726**; EP 1433217 A2 **EP 2002-768358 20020726**; US 20030099884 A1 **US 2002-206662 20020726**; EP 1433217 A2 **WO 2002-US23880 20020726** ; JP 2005525674 W **WO 2002-US23880 20020726**; IN 2004000118 P2 **WO 2002-US23880 20020726**; JP 2005525674 W **JP 2003-517975 20020726**; KR 2004047780 A KR 2004-701229 20040127; IN 2004000118 P2 IN 2004-KN118 20040130; CN 1864298 A **CN 2002-818181 20020726**

FDT EP 1433217 A2 Based on WO 2003012908 A; AU 2002330924 A1 Based on WO 2003012908 A; JP 2005525674 W Based on WO 2003012908 A; AU 2002330924 A8 Based on WO 2003012908 A

PRAI **US 2001-21740 20011022**
US 2001-308360P 20010727
US 2002-206662 20020726

AB WO 2003012908 A2 UPAB: 20060119
NOVELTY - An electrochemical device comprises an interpenetrating network formed by two electrodes in electrical communication with their respective current collectors, one or both of the electrodes having a structure providing at least two pathways to the current collector. An ionically conductive medium is ionic contact with the electrodes.
DETAILED DESCRIPTION - The electrodes are composed of a branching structure where the crossectional area of the electrodes increases as the electrodes approach their current collectors. One or both of the, preferably interlocked, electrodes are preferably formed from sintered particles forming a sintered body or one or more of the electrodes comprises an open-celled foam or sponge. The particles of the two electrodes preferably exert a repelling force on the particles of the opposing electrode each other when combined with the ionic medium, and are self attractive in the ionically conductive medium or **electrolyte** which has an ionic conductive of less than 10-4 S/cm.
Preferred electrochemical device: The electrochemical device has a power density of greater than 300 W/kg and an energy density of greater than 450 W-h/l for cells having a cell thickness less than 0.1 mm, where the cell thickness includes the collectors. An INDEPENDENT CLAIM is included for a method comprising forming a bipolar article by introducing a first component composed of sub-components that are self attractive and introducing a second component composed of sub-components that are self-attractive and that exert a repelling force on the first component in a medium. The particles of the first component self-organize into a first network and the components of the second component are allowed to self-aggregate into a second network. The first and second components are preferably allowed to self-aggregate onto an interpenetrating network.

INDEPENDENT CLAIMS are also included for: (1) a capacitor composed of two poles separated by an electrically insulating material to give a Hamaker constant that is negative; (2) an electrochromic device composed of first and second poles, at least one of which is composed of a material that changes color or optical transmission when oxidized or reduced, the poles being separated by an insulating material

USE - For energy storage devices, e.g. secondary batteries, capacitors and electrochromic devices

ADVANTAGE - The electrode interface area with the ionically conductive medium is maximized and the distance or path that ions and/or electrodes must reliably traverse during operation of the device is minimized.

DESCRIPTION OF DRAWINGS - The drawing shows a schematic illustration of a self-organizing bipolar device.

TECH

INORGANIC CHEMISTRY - Preferred electronically-connected particles: The electronically-connected particles are composed of LiCoO2 and LiCoO2 doped with Mg, LiNiO2 LiMnO2, optionally doped with Al, LiFePO4, optionally doped with Mg, Al, Ti, Nb, Ta or W, Li2Fe2(SO4)3, **V2O5**, V6O11, C, amorphous carbon, graphite, mesocarbon microbeads, L. LiAl, Li9Al4, Li3Al, Zn, LiZn, Ag, LiAg, Li10Ag3, B, Li5B4, Li7B6, Ge, Si, Li12Si7, Li12Si8, Li13Si4, Li21Si5, Sn, Li5Sn2, Li13Sn5, Li7Sn2, Li22Sn5, Sb, Li2Sb, LiSb, Bi, LiBi, Li3Bi, SnO2, SnO, MnO, Mn2O3, MnO2, Mn3O4, CoO, NiO, FeO, LiFe2O4, **TiO2**, LiTi2O4, glass with a Sn-B-P-O compound and mesocarbon microbeads coated with at least one of poly(o-methoxyanaline, poly-3-octylthiophene) and poly(vinylidene fluoride).

ORGANIC CHEMISTRY - Preferred ionically conductive medium: The ionically conductive medium is one or more of poly(ethylene oxide), poly(propylene oxide), poly(styrene), poly(imide), poly(acrylonitrile), poly(vinylidene fluoride) methoxyethoxy phosphazine, diiodomethane, 1, 3-diiodopropane, N, N-dimethylformamide, dimethylpropylene urea, ethylene carbonate, diethylene carbonate, propylene carbonate, a block copolymer lithium **electrolyte**, doped with a lithium salt, glass with at least one of LiI, LiF, **LiCl**, **Li2O-B2O3**-Bi2O3, **Li2O-B2O3**-P2O5 and **Li2O-B2O3**-PbO and a sol or gel of the oxides or hydroxides of Si, B, P, Ti, Zr, Pb or BI.

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L111 ANSWER 5 OF 5  WPIX COPYRIGHT 2007      THE THOMSON CORP on STN
AN   2000-674236 [66]   WPIX  Full-text
CR   2001-026561
DNC  C2000-204503 [66]
DNN  N2000-499852 [66]
TI   Electrochemical cell comprises an alkali metal electrode, a cathode, a
     catholyte, and a separator comprising E-glass material between the anode
     and the cathode
DC   L01; L03; X16
IN   DAVID; SPILLMAN D M; TAKEUCHI E S
PA   (GREW-C) GREATBATCH LTD WILSON
CYC  27
PIA  EP 1050913       A1 20001108 (200066)* EN  9[0]                  <--
     JP 2001118584    A  20010427 (200130)  JA  25                    <--
     US 6410181       B1 20020625 (200246)  EN                        <--
     EP 1050913       B1 20070124 (200710)  EN
     DE 60033083      E  20070315 (200726)  DE
ADT  EP 1050913 A1 EP 2000-303777 20000505; US 6410181 B1 Provisional
     US 1999-132549P 19990505; US 6410181 B1 US 2000-562532
     20000502; JP 2001118584 A JP 2000-176121 20000508; DE
     60033083 E DE 2000-633083 20000505; DE 60033083 E EP
     2000-303777 20000505
FDT  DE 60033083      E Based on EP 1050913      A
PRAI US 2000-562532        20000502
```

US 1999-132549P 19990505

AB EP 1050913 A1 UPAB: 20050412

NOVELTY - An electrochemical cell comprises: an alkali metal electrode; a cathode; a catholyte; and a separator comprising E-glass material between the anode and the cathode.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a method of providing an electrochemical cell which comprises: (a) providing an alkali metal anode; (b) providing a cathode current collector; (c) activating the anode and the cathode current collector with a catholyte;

(d) positioning a separator of E-glass material between the anode and the cathode.

USE - None given.

ADVANTAGE - The electrochemical cell exhibits increased energy density and improved restart capability in comparison to conventional cells.

TECH

ORGANIC CHEMISTRY - Preferred Materials: The catholyte comprises an organic solvent which is selected from tetrahydrofuran, propylene carbonate, acetonitrile, dimethyl sulfoxide, dimethyl foramide, diacetyl acetamide and mixtures of these. The cathode comprises a carbonaceous material.

ELECTRICAL POWER AND ENERGY - Preferred Cell: A casing houses the anode and cathode. The casing serves as a first terminal for one of the electrodes and a lead serves as a terminal for the other electrode.

INORGANIC CHEMISTRY - Preferred Materials: The catholyte comprises an inorganic depolarizer solvent selected from thionyl chloride, sulfuryl chloride, selenium oxychloride, chromyl chloride, phosphoryl chloride and phosphorus sulfur trichloride.

A halogen or an interhalogen is dissolved in the catholyte. The halogen is selected from iodine, bromine, chlorine, fluorine and mixtures of these. The interhalogen is selected from chlorine fluoride (ClF), chlorine trifluoride (ClF3), iodine chloride (ICI), iodine trichloride (ICl3), iodine bromine (IBr), iodine trifluoride (IF3), iodine pentafluoride (IF5), bromine chloride (BrCl), bromine fluoride (BrF), bromine trifluoride (BrF3), bromine pentafluoride (BrF5) and mixtures of these.

The catholyte comprises lithium aluminum chloride (LiAlCl4) dissolved in thionyl chloride.

The catholyte includes a salt selected from **LiCl**, LiBr, LiPF6, LiBF4, LiAsF6, LiSbF6, LiClO4, LiAlCl4, LiGaCl4, LiC(SO2CF3)3, LiN(SO2CF3)2, LiSCN, LiO3SCF2CF3, LiC6H5SO3, LiO2, LiO2CCF3, LiSO3F, LiB(C6H5)4, LiCF3SO3 and mixtures of these.

CERAMICS AND GLASS - Preferred Materials: The E-glass material comprises (wt.%): 52 - 56 silica (SiO2), 12 - 16 alumina (Al2O3), not more than 6 magnesium oxide (MgO), 16 -25 calcium oxide (CaO), not more than 2 sodium oxide + potassium oxide (Na2O + K2O), 5 - 10 **boron oxide** (**B2O3**), not more than 1.5 **titanium dioxide** (**TiO2**), not more than 1 fluorine (F2) and 0.8 iron oxide (FeO).

METALLURGY - Preferred Materials: The lead is 52 alloy preferably plated with nickel.

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     (FILE 'HOME' ENTERED AT 08:40:20 ON 01 MAY 2007)
                SET COST OFF

     FILE 'HCAPLUS' ENTERED AT 08:40:36 ON 01 MAY 2007
L1            1 S US20040151986/PN OR (US2004-757500# OR KR2003-6288)/AP,PRN
                E PARK/AU
L2           19 S E3
                E PARK Y/AU
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L3          615 S E3,E23
                E PARK YOUNG/AU
L4           39 S E3
                E PARK YOUNG S/AU
L5           45 S E3,E29
                E PARK YOUNGS/AU
L6            2 S E7
                E PARK NAME/AU
L7          118 S E4
                E LEE/AU
L8           35 S E3
                E LEE J/AU
L9         3531 S E3,E43-E45
                E LEE JONG/AU
L10          39 S E3
                E LEE JONG H/AU
L11         164 S E3,E14-E16
                E LEE JONGH/AU
                E LEE NAME/AU
L12         276 S E4
                E JIN/AU
L13           1 S E3
                E JIN Y/AU
L14         492 S E3,E8
                E JIN YOUNG/AU
L15          27 S E3,E10
                E JIN YOUNGG/AU
                E JIN NAME/AU
L16           7 S E4
                E LEE S/AU
L17        1346 S E3
                E LEE S S/AU
L18         335 S E3-E7
                E LEE SEOK/AU
L19          95 S E3
L20          11 S E69
                E LEE SEOKS/AU
                E YOUNG/AU
L21           2 S E3
                E YOUNG S/AU
L22         176 S E3
L23          15 S E22
                E YOUNG SIN/AU
                E YOUNGSIN/AU
                E YOUNG NAME/AU
L24           3 S E4
                E JONG/AU
                E JONG H/AU
                E JONG NAME/AU
                E JONGH/AU
                E YOUNG G/AU
L25          78 S E3
L26          41 S E18,E19
                E YOUNG GU/AU
                E YOUNGGU/AU

     FILE 'REGISTRY' ENTERED AT 08:47:39 ON 01 MAY 2007
L27           4 S 13463-67-7 OR 1314-62-1 OR 1314-35-8 OR 1314-61-0
L28           2 S 7447-41-8 OR 10377-48-7
L29           9 S 7664-93-9/CRN AND LI/ELS AND 2/NC
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L30          6 S L29 NOT (6LI OR 7LI)
L31          7 S L28,L30
L32          1 S 12057-24-8
L33          1 S 1303-86-2
L34       1063 S (13463-67-7 OR 1314-62-1 OR 1314-35-8 OR 1314-61-0)/CRN
L35          1 S L34 AND 12057-24-8/CRN
L36          2 S L34 AND 1303-86-2/CRN
L37          0 S L34 AND (175170-04-4 OR 165817-30-1 OR 28686-04-6 OR 15147-42

     FILE 'HCAPLUS' ENTERED AT 08:51:36 ON 01 MAY 2007
L38     207030 S L27
L39     211593 S TIO2 OR V2O5 OR WO3 OR TA2O5
L40     198985 S TITANIA OR TITANIUM()(OXIDE OR DIOXIDE OR DI OXIDE)
L41      37363 S (VANADIUM OR DIVANADIUM)()(OXIDE OR PENTOXIDE OR PENTAOXIDE)
L42      24917 S TUNGSTEN()(OXIDE OR TRIOXIDE OR TRI OXIDE)
L43      23754 S (TANTALUM OR DITANTALUM)()(OXIDE OR PENTOXIDE OR PENTAOXIDE)
L44       1074 S TANTALA OR TUNGSTIC OXIDE
L45     349605 S L38-L44
L46        759 S L45 AND L31
L47      39333 S LICL OR (LI OR LITHIUM)()CHLORIDE
L48       4792 S LI2SO4 OR LI2 SO4 OR (LI OR LITHIUM OR DILITHIUM)()(SULFATE O
L49        906 S L45 AND L47,L48
L50        993 S L46,L49
L51         50 S L50 AND L33
L52      48353 S B2O3 OR BORON OXIDE
L53         56 S L50 AND L52
L54         69 S L51,L53
L55         30 S L54 AND L32
L56      30847 S LI2O OR (LI OR LITHIUM OR DILITHIUM OR LI2)()OXIDE
L57         33 S L54 AND L56
L58         37 S L55,L57
L59         15 S L58 AND PY<=2003 NOT P/DT
L60         18 S L58 AND (PD<=20030130 OR PRD<=20030130 OR AD<=20030130) AND P
L61         33 S L59,L60
L62          1 S L1-L26 AND L61
L63          1 S L1-L26 AND L58
L64          1 S L62,L63
L65          1 S L61 AND SAMSUN?/PA,CS
L66          1 S L64,L65
L67          9 S L61 AND ?ELECTROLYT?
               E ELECTROLYTE/CT
L68          3 S E3
L69      43926 S E18-E33
               E E18+ALL
L70      95169 S E4+NT
L71     752628 S E25+OLD,NT,PFT,RT OR E26+OLD,NT,PFT,RT OR E27+OLD,NT,PFT,RT O
               E E9+ALL
L72       4414 S E6
L73       4414 S E6+OLDNT
               E E4+ALL
               E E11+ALL
L74       5090 S E11+OLD
L75         10 S L61 AND L68-L74
L76         13 S L66,L67,L75
L77          7 S L61 AND H01M/IPC,IC,ICM,ICS
L78         14 S L76,L77
L79          9 S L78 AND (?BATTER? OR FUEL CELL OR ELECTR? CELL)
L80         10 S L77,L79
L81          4 S L78 NOT L80
L82         19 S L61 NOT L78
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     FILE 'HCAPLUS' ENTERED AT 09:04:31 ON 01 MAY 2007

     FILE 'WPIX' ENTERED AT 09:04:53 ON 01 MAY 2007
L83          98835 S L39 OR L40 OR L41 OR L42 OR L43 OR L44
                   E TITANIA/CN
L84              1 S E3
                   E VANADIUM OXIDE/CN
L85              1 S E5
                   E TUNGSTEN OXIDE/CN
L86              1 S E11
                   E TANTALUM OXIDE/CN
L87              1 S E7
L88              4 S L84-L87
                   SEL SDCN
                   EDIT /SDCN /DCN
L89          26609 S E1-E4
L90          40661 S (1522 OR 1966)/DRN
L91         112626 S L83,L89,L90
L92           5504 S L47 OR L48
                   E LITHIUM CHLORIDE/CN
L93              1 S E3
                   E LITHIUM SULFATE/CN
L94              1 S E3
L95              2 S L93,L94
                   SEL SDCN
                   EDIT /SDCN /DCN
L96           1133 S E1-E2
L97           2510 S (1679 OR 1914)/DRN
L98            246 S L91 AND L92,L96,L97
L99          17228 S L52
                   E BORON OXIDE/CN
L100             1 S E3
L101          4188 S R01498/DCN OR 1498/DRN
L102            14 S L98 AND L99,L101
L103          7228 S L56
                   E LITHIUM OXIDE/CN
L104             1 S E3
L105          1423 S R01941/DCN OR 1941/DRN
L106             6 S L102 AND L103,L105
L107             6 S L106 AND (PD<=20030130 OR PRD<=20030130 OR AD<=20030130)
L108             5 S L107 AND H01M/IPC,IC,ICM,ICS
L109             4 S L107 AND ?ELECTROLYT?
L110             1 S L107 NOT L108,L109
L111             5 S L108,L109

     FILE 'WPIX' ENTERED AT 09:11:23 ON 01 MAY 2007

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